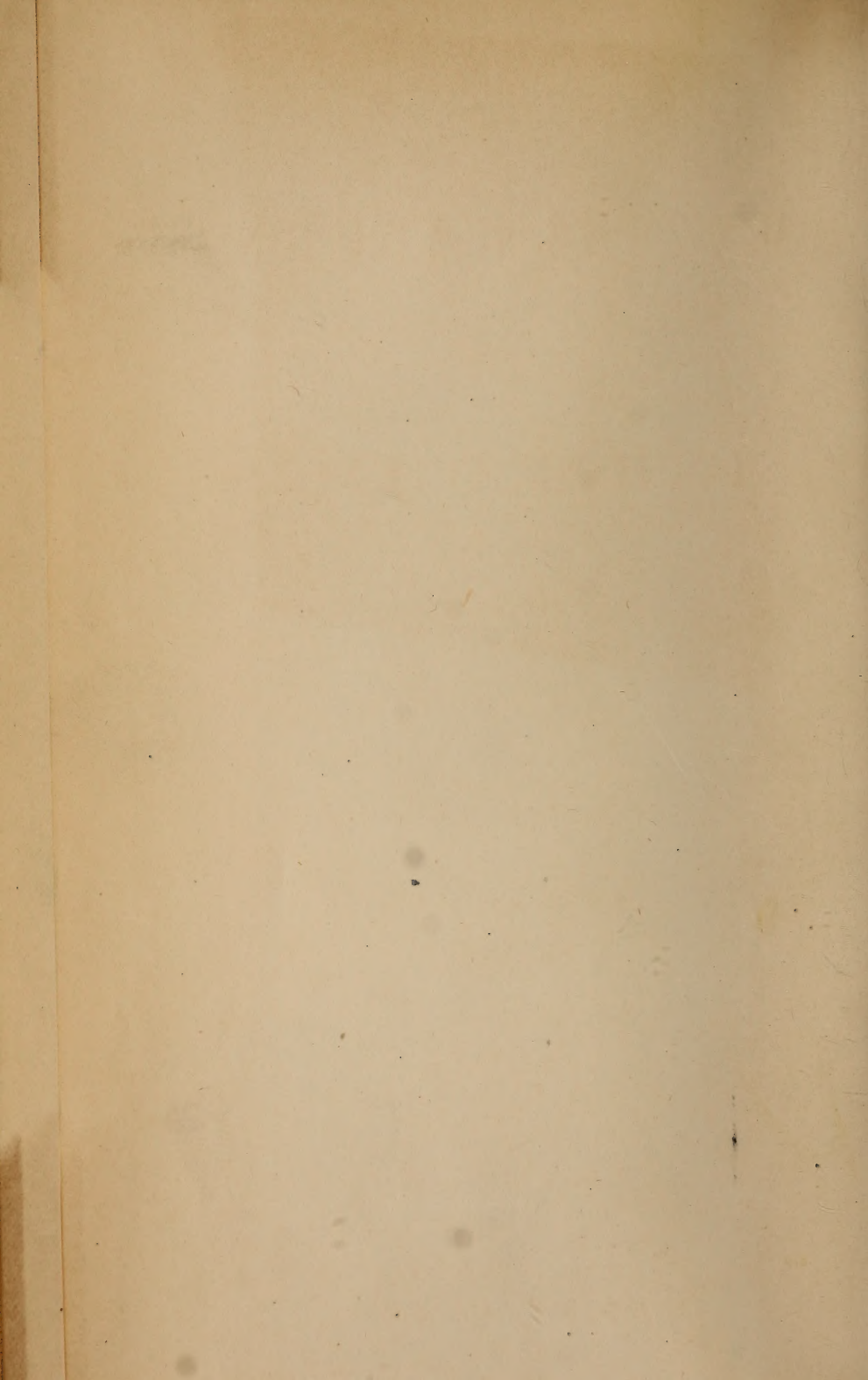




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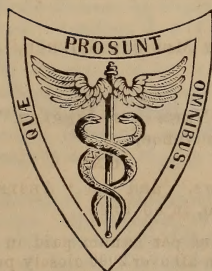
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
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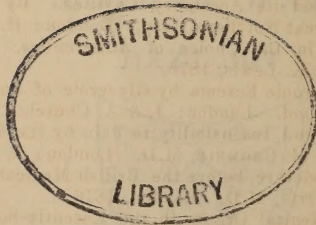
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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of August.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Reports of the Medical Officer of the Privy Council and Local Government Board. New Series: No. IV.—Annual Report to the Local Government Board with regard to the year 1874. No. V.—Papers, concerning the European relations of Asiatic Cholera, submitted to the Local Government Board in supplement to the Annual Report of the present year. No. VI.—Report to the Lords of the Council on Scientific Investigations, made under their direction, in aid of Pathology and Medicine. London, 1875.

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Description of the Models of Hospital Cars exhibited in room No. 2. No. 3. Description of the Models of Hospitals. No. 4. Description of the Models of Hospital Steam-vessel. No. 5. Description of Perot & Co.'s Improved U. S. A. Medicine Wagon, and of Perot & Co.'s U. S. A. Mess-Chest. By J. J. WOODWARD, Assist.-Surg. U. S. A., in charge of the Representation of the Med. Dept. U. S. A. Philad. 1876.

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 Archiv der Heilkunde, Heft IV., 1876.
 Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin, Nos. 5, 6, 1875.
 Centralblatt für die Medicinische Wissenschaften. Nos. 10 to 23, 1876.
 Allgemeine Wiener Medizinische Zeitung. Nos. 9 to 21, 1876.
 Deutsche Medicinische Wochenschrift. Nos. 9 to 22, 1876.
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 Giornale Italiano delle Malattie Veneree e della Pelle, febbrajo, 1876.
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 Rivista Sperimentale di Medicina Legale. Gennaio, 1876.
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 The Canadian Journal of Medical Science. February, April, June, 1876.
 The Canada Lancet. April, May, June, 1876.

The usual American exchanges have been received; their individual acknowledgment we are compelled to omit for want of space.

Communications intended for publication, and books for review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London, will reach us safely and without delay.

All remittances of money and letters on the business of the Journal should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

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THE
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OF THE MEDICAL SCIENCES
FOR JULY 1876.

ART. I.—*An Account of some of the Earlier and hitherto Unpublished Cases of Ligations of Arteries performed at the Pennsylvania Hospital between 1802 and 1820 ; with a revised Table of the Arteries which have been tied, and the mortality following this operation in that Institution.* By THOMAS G. MORTON, M.D., one of the Attending Surgeons.

IN the number of this Journal for April, 1876, I published the histories of all the ligations of arteries performed at the Pennsylvania Hospital from 1868 to 1875, inclusive ; with a table of all the arteries which had been tied in that institution during the past forty years. I then stated that "previous to 1835, it does not appear from the hospital records that any large vessel was tied ;" this statement I find is not correct, for, within the past few days, by a mere chance I came across in the library of the Hospital a very interesting old manuscript "Case Book," which had never been catalogued, and the existence of which was unknown to my colleagues and myself, and I presume also to the late Dr. Geo. W. Norris, as no mention of the operations upon the arteries therein recorded is to be found in his "Tables of Ligations of Arteries." In the case book referred to, I have found a number of cases of arterial ligations ; a brief account of these I have thought well to publish, in order that the series of hospital cases shall be as complete as possible. I have also added a note of a successful ligation of the external iliac artery, at the hospital, being the first operation upon this vessel performed in this country, and reported by Dr. J. S. Dorsey in his Elements of Surgery.

In January, 1869, my colleague, Dr. Wm. Hunt, tied the femoral artery
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for a traumatic aneurism of this vessel, but I was unable to obtain any reliable notes of the case at the time of the publication of my paper; since then Dr. Hunt has furnished me with his original notes, which had been mislaid. Previous to the spring of 1869, there was no regular system at the Pennsylvania Hospital of note taking, so that considerable difficulty has been experienced in collecting the cases which have been recorded :—

CASE 1. *Traumatic Aneurism; Ligation of the Brachial Artery; Recovery.*—John S., a mariner, aged 24, was bled by a sailor in the basilic vein about a week previous to admission on August 3, 1802. The hemorrhage after this operation was profuse. When admitted no union had taken place in the wound, and the hemorrhage was only prevented by a piece of sheet lead; Dr. Coxe made an incision three inches in length, exposed the artery, and applied silk ligatures above and below the wound in the vessel; the ligatures separated on the fifteenth day. Oct 20. Discharged well.

CASE 2. *Traumatic Aneurism; Ligation of the Brachial Artery; Recovery.*—Mary E., aged 25, being slightly indisposed in July, was bled by a farrier in the basilic vein in the left arm; the hemorrhage was with difficulty suppressed, but by the fourth day the wound had healed; a week afterwards a pulsating tumour was discovered; this gradually enlarged; on August 29, 1802, she was admitted into the hospital. Dr. Physick cut down upon the tumour, and found the artery opened into the sac; the brachial above and below was tied with ligatures of "bobbin;" in fifteen minutes there was pulsation at the wrist, on the twelfth day the ligatures separated. Discharged, cured, September 19th.

CASE 3. *Popliteal Aneurism; Ligation of the Femoral Artery; Recovery.*—Henry B., aged 35, a blacksmith, was admitted Feb. 4, 1803, with popliteal aneurism of the left leg. The first symptom was a violent pain in the ham in July, 1802. At the time of admission the tumour projected five inches from the popliteal space. The femoral artery was tied with a strong ligature by Dr. P. S. Physick; "at different times after the operation the heat of each limb was examined by a thermometer, but the temperature was the same in both." The ligature separated at the end of the fourth week, and the patient was discharged cured March 5, 1803, the tumour having almost disappeared.

CASE 4. Henry B., aged 35 (see Case 3), was re-admitted June 7, 1804, with an aneurism of the popliteal artery of the right limb; the femoral was successfully tied by Dr. Physick, and the patient was discharged cured July 13th.

CASES 5 and 6. *Compound Fracture of the Ankle; Amputation of the Leg; Hemorrhage; Ligation of the Femoral Artery; Recovery.*—J. Z., a porter, aged 31, of drinking habits, was admitted July 31, 1806, with a crushed ankle. Dr. Wistar the next day amputated the leg; on Aug. 7th mania à potu developed, and on the 10th a violent hemorrhage occurred; on the 11th and 12th other hemorrhages followed, when a large needle was passed deeply into the muscles, and made to include a considerable portion of the muscular flesh wound around the part from whence the blood seemed to flow, this controlled at the time the hemorrhage; bleeding came on in half an hour, when the femoral was tied. On the 25th, hemorrhage to the extent of four ounces came from the region

of the ligated femoral. On the 26th, Dr. Wistar laid bare the femoral artery higher up, and tied the vessel in two places, and divided the artery. October 1st, lower ligature taken away. October 4th, second ligature removed. December 31, Dr. Physick removed about twelve inches of the femur which, with the knee-joint, had become necrosed; the patient was discharged May 2, 1807, cured.

CASE 7. *Inguinal Aneurism*;¹ *Ligation of the External Iliac Artery; Recovery*.—Alex. P., aged 30, much given to violent exercise, was admitted August 14, 1811, with aneurism of the right groin, which had been growing two years, and was situated immediately under Poupart's ligament, and measured 4×5 inches. The skin on the tumour was thin and discoloured. The external iliac artery was tied high up. On the 14th day the ligature separated, and patient was discharged quite well November 16, 1811.

CASE 8. *Aneurism of Anterior Tibial Artery; Recovery*.—Jacob T. was admitted July 25, 1820, with an aneurismal tumour of the leg at the ankle, which followed after a severe blow from a billet of wood, about six months before. Dr. Parrish tied the anterior tibial artery about the middle of the leg August 5, 1820; two ligatures of catgut were applied, and the vessel was divided between. On October 7th patient was discharged cured.

CASE 9. *Popliteal Aneurism; Ligation of the Femoral Artery after the Sac was opened; Death*.—George S., aged 30, was admitted September 18, 1820, with a large tumour of the ham, in which there was an obscure fluctuation but no pulsation. September 23d, Dr. Hewson opened the tumour, which was found filled with blood; this was removed, and when the tourniquet was loosened a copious flow of blood followed. The femoral was then tied in two places with silk ligatures, and the vessel was divided between them; arterial blood still continuing to flow from the sac, it was stuffed with lint. On the 27th a fierce gush of blood from the sac terminated the patient's life. An examination showed a small aneurism of the popliteal artery, which had burst, throwing its blood into the surrounding structures.

Traumatic Aneurism of Femoral Artery; Ligation of Vessel above and below the Sac; Death from Pyæmia on the 33d day.—Wm. McN., admitted into Pennsylvania Hospital, January 8, 1869. Six weeks before, he was stabbed through lower portion of femoral artery. Was treated with pressure and position, but probably got about too soon, for, upon walking, he felt something suddenly give way with a crack. A large pulsating tumour formed, which threatened to burst through the skin.

9th. After consultation, Dr. Hunt tied the femoral well up in Scarpa's triangle. The tumour was then opened freely and large masses of clot were turned out. A ligature was placed on the vessel below the wound. There was still some bleeding, and a third ligature was then applied also below the wound in the vessel. This completely controlled the hemorrhage. The patient got on well until the 18th, when secondary hemorrhage occurred. This was controlled by acupressure pins. On the 20th the patient had rigors and another slight hemorrhage which was controlled by pins. Pyæmia now set in. There was no return of bleeding. Death occurred February 11, 1869.

¹ Dorsey's Elements of Surgery, vol. ii.

Table of Ligations of Arteries at the Pennsylvania Hospital.

No.	Operator.	Date.	Sex.	Age.	Side.	Artery ligated.	Disease or injury.	Result.	Cause of death.	Day Ligature separated.
1	Coxe	1802	M.	24	L.	Brachial	Traumatic aneurism	Cured	.....	15th
2	Physick	1802	F.	25	L.	Brachial	Traumatic aneurism	Cured	.....	12th
3	Physick	1803	M.	35	L.	Femoral	Popliteal aneurism	Cured	.....	28th
4	Physick	1804	M.	35	R.	Femoral	Popliteal aneurism	Cured	.....	.....
5	Wistar	1806	M.	31	..	Femoral	Hemorrhage after leg amputation	.....	.....	18th
6	Wistar	1806	M.	31	..	Femoral 2d time	Hemorrhage after femoral ligation	Cured	.....	10th
7	Dorsey	1811	M.	30	R.	External iliac	Inguinal aneurism	Cured	.....	14th
8	Parrish	1820	M.	..	..	Anterior tibial	Aneurism	Cured	.....	....
9	Hewson	1820	M.	30	..	Femoral	Popliteal aneurism	Died	Hemorrhage	....
10	Randolph	1836	M.	59	R.	Common carotid	Varicose aneurism	Died	Congestion of brain day after operation	....
11	Norris	1838	M.	32	L.	Femoral	Aneurismal tumour of leg	Cured	.....	17th
12	Peace	1841	M.	38	R.	External iliac	Inguinal aneurism	Cured	.....	30th
13	Peace	1842	M.	36	R.	Common iliac	Inguinal aneurism	Cured	.....	35th
14	Peace	1844	M.	46	R.	Common carotid	Hemorrhage	Died	On 31st day from hemorrhage	12th
15	Norris	1846	M.	35	L.	Femoral	Popliteal aneurism	Cured	.....	26th
16	Fox	1848	M.	24	R.	External iliac	Inguinal aneurism	Cured	.....	17th
17	Fox	1848	M.	49	R.	Common carotid	Carotid aneurism	Cured	.....	20th
18	Norris	1852	M.	42	R.	Femoral	Popliteal aneurism	Cured	.....	21st
19	Morton	1864	F.	36	R.	Common carotid	Orbital aneurism	Cured *	.....	17th
20	Morton	1865	M.	26	R.	Femoral	Femoral aneurism	Cured	.....	16th
21	Morton	1866	M.	51	L.	Subclavian	Axillary aneurism	Cured	.....	18th
22	Hewson	1866	M.	42	L.	Femoral	Femoral aneurism	Cured	.....	21st
23	Hewson	1867	M.	51	R.	Common carotid	Innominate aneurism	Died	On 12th day from serous effusion of the lungs	....
24	Morton	1867	M.	57	R.	External iliac	Aneurism of profunda and femoral	Died	3d day from peritonitis	....
25	Morton	1867	M.	21	R.	Femoral	Arterio-venous aneurism	Cured	.....	8th
26	Morton	1867	M.	24	L.	Internal iliac	Pulsating tumour of buttock	Cured	Afterwards died of malignant disease	22d
27	Hunt	1868	F.	28	R.	Common carotid	Gunshot wound of neck	Cured	.....	28th
28	Morton	1868	M.	37	R.	Subclavian	Railroad crush	Died	Hemorrhage	....
29	Morton	1868	F.	66	L.	Axillary	Wound of brachial	Cured	.....	8th
30	Hunt	1869	M.	..	..	Femoral	Traumatic aneurism	Died	Pyemia	....
31	Hewson	1869	M.	25	..	Femoral	Popliteal aneurism	Cured	.....	....
32	Morton	1869	M.	27	L.	Common carotid	Hemorrhage	Died	Rupture of jugular vein	....
33	Levis	1872	M.	26	L.	Brachial	Incised wound and secondary hemorrhage	Cured	.....	....
34	Morton	1873	M.	30	R.	Femoral	Elephantiasis Arabum	Cured	.....	21st
35	Morton	1873	M.	30	L.	Femoral	Popliteal aneurism	Cured	.....	10th
36	Hewson	1874	M.	40	R.	Femoral	Gunshot wound of femoral artery	Died	Gangrene and exhaustion	....
37	Levis	1874	M.	48	L.	Femoral	Popliteal aneurism	Died	Phlebitis	....
38	Morton	1874	F.	23	L.	Common carotid	Supposed intra-cranial aneurism	Died	Cerebral anemia	....
39	Morton	1876	M.	43	L.	Common carotid	Pulsating orbital tumour	Died	Serous apoplexy	....

* February, 1876, continues well.

Table showing the Mortality after the Ligation of Arteries.

Artery.	Cured.	Died.	Total.
Common carotid	3	6	9
Subclavian	1	1	2
Axillary	1		1
Brachial	3		3
Common iliac	1		1
Internal iliac	1		1
External iliac	3	1	4
Femoral ¹	12	4	16
Anterior tibial	1		1
	26	12	38

ART. II. — *A Clinical Study on Herpes Zoster.* By L. DUNCAN BULKLEY, A.M., M.D., Physician to the Skin Department, Demilt Dispensary, New York, etc.

FOREMOST in the rank of diseases affecting the skin, which may with measurable propriety be attributed to the influence of the nervous system, stands herpes, in its various forms and phases, and, central in the entire group, herpes zoster, zona, or shingles is recognized as intimately associated with direct lesions found *post-mortem* in the nerve elements related to the portions of skin affected. I will not do violence to the knowledge or experience of my readers by entering either into the ordinary clinical history of, or the microscopical conditions observed in this interesting disease, which are familiar to all, but will at once proceed with the history of a case of herpes zoster, which exhibits certain interesting and unusual features, and which has given rise to the thoughts herewith presented. I will reserve for another occasion a discussion of the varieties of herpes and their relations to each other.

I may premise that perhaps the most interesting feature, to many, in the case presented, is the history of the large glandular swelling in the neck on the same side as the herpes, and its rapid and complete disappearance under the internal use of arsenic. For the notes of this portion I am indebted to my friend, Dr. V. P. Gibney, under whose care the patient was at the time, and who kindly referred him to me on the appearance of the skin lesions.

John M., aged 73, on September 3, 1875, presented an extremely emaciated appearance, and exhibited an enormous tumour, located in the right cervical region anteriorly, extending from the angle of the jaw downwards, overlapping the clavicle; laterally it reached from the median line

¹ Same vessel tied twice. See Case 5.

(at the *pomum Adami*) to within an inch or so of the acromion process. It was hard to the feel, the integumental covering was markedly discoloured, and the veins running through it large and tortuous.

The history was that it began almost imperceptibly, no cause being known, and was of comparatively recent origin; he was living in a damp basement, and the hygienic surroundings were lamentable. The case was sent to Dr. Frank Hamilton, who considered it a malignant growth, inclining strongly towards the diagnosis of "lympho-sarcoma." Removal was contra-indicated, he thought, by the age of the patient (over 70), his wretched cachexia, and the unfavourable habitation. It was agreed to make use of arsenic internally, and a change of residence was urged. He received the liquor potassæ arsenitis, five drops thrice daily. On October 18th, six weeks and a half later, he was seen for the second time, and the change in his condition was so great that he was hardly recognized by Dr. Gibney. The tumour was at least three-quarters smaller, the general health good, and the old man seemed rejuvenated. He had taken the Fowler's solution regularly, and had recently succeeded in moving out of the basement to a floor above ground. The arsenic was ordered to be continued, and seven weeks later, December 8th, he again called and stated that the tumour had been gone for six weeks, and that he had discontinued the use of the arsenic since Nov. 1. It was then difficult to detect even a trace of the tumour. At this visit he called attention to the herpes zoster occupying the right arm, and was recommended to my care.

I find on my notes of the case that he appeared to be at that time rather uncommonly active and well preserved for one of his years, and that very careful examination failed to detect any tumour on its former site, but that there appeared to be a very slight thickening over the extent, perhaps, of two inches just about the centre of the space between the ear and the acromion process of the right side; this gave rather the feeling of a fatty deposit just beneath the skin, but not of any very great thickness.

The arm of that side (right) was the seat of a very abundant and rather peculiarly arranged eruption of herpes zoster. The chest, front and rear, was entirely free from eruption, there being not even any red or tender spots, sometimes the evidence of aborted eruptions—the surface of the thorax was healthy. The eruption began at the back of the shoulder, but quite low down, at least an inch and a half below the end of the humerus, and at about the same point, or a little lower down, on the anterior aspect of the arm. The groups here and elsewhere were pretty thickly set, and the inflammatory action was severe, as the vesicles here and also on the arm were large and flat, and many of them had run together, forming large, flat, bullous masses. The eruption wound around the arm, from behind forwards, in a band of about two inches in width, following closely the course of the cutaneous branch of the musculo-spiral nerve. Passing thus around from the back to the front of the arm, the lower portion of the upper arm, and the entire anterior and outer aspect of the forearm were covered with two or three bands of vesicles, irregularly traced and often touching, so that about one-third of the entire circumference of the limb was covered by the eruption.

Upon the hand the disease occupied also the radial aspect and extended down even to the tips of the thumb and forefinger; the pain in the thumb was so great as to keep the patient from sleeping. The eruption appeared to be in about the fourth or fifth day, and the clinical history corresponded to this. The patient was given phosphide of zinc with *nux vomica*, and

did well; but the further history of the case does not concern us at present.

A careful study of the distribution of this eruption as here recorded, in its relations to the distribution of the cutaneous nerves of the part, renders the conclusions inevitable that there must be some connection between the two. I am aware, of course, that the observation of a relation of the location and arrangement of the skin lesions of herpes zoster to nerve distribution is no new matter, but the observations in regard to this, if I mistake not, have hitherto been drawn largely, if not entirely, from the distribution of the eruption on the chest, abdomen, and head, where the nerve tracts are more evident. In tracing it in this instance on the arm it is with the further view of seeking an etiological factor in the case before us, and of assisting thereby in a study of the etiology of the disease.

A comparison, then, of the distribution of the eruption with that of the cutaneous nerves, as given by Gray and Sappey, shows that the lesions were entirely confined to the regions innervated by the circumflex, musculo-spiral, musculo-cutaneous (or external cutaneous), median, and radial nerves. Thus the integument of the upper part of the arm, front and rear, up to within a short distance of the head of the humerus, is supplied by the circumflex, in its anterior and posterior branches, over which were groups of vesicles; a band of vesicles followed directly the course of the musculo-spiral nerve, twisting around from behind forwards; the mass of the eruption on the arm and forearm occupied the tract of the external cutaneous nerve along the anterior or radial aspect of the limb, even on to the thumb, which receives cutaneous filaments from this nerve; finally, the radial nerve sends branches to the skin of the back of the thumb and forefinger, and the median nerve to the inner surfaces of the same, all of which parts were also sprinkled with vesicles. These latter parts were the seat of the most pain, which was here very severe.

Tracing now these nerves to their origin, we find the musculo-spiral (from which the radial nerve is given off) and the circumflex nerves coming from the posterior cord of the brachial plexus, and the musculo-cutaneous (or external cutaneous), together with the median nerve, is formed from the outer cord (the median receiving also a branch from the inner cord). These two cords of the brachial plexus, the posterior and outer, are further found to be composed mainly of the fibres of the *upper of the two primary cords*, of the plexus (although the posterior cord receives also a branch from lower main cord); finally, this *upper* main cord is seen to be made up of the 5th, 6th, and 7th cervical nerves, the lower main cord being formed from the 8th cervical and 1st dorsal. Now there was no eruption upon the course of the nerves which are derived wholly from the *lower* main cord, the ulnar, and the internal cutaneous, and we trace, therefore, the eruption in this case to the *upper* of the two main primary cords of the brachial plexus, which we have found to be composed wholly

of the 5th, 6th, and 7th cervical nerves (with a small fasciculus from the 4th cervical). Thus we are enabled to locate the nerve lesion somewhere about these large trunks or in the main cervical nerves, namely, the 5th, 6th, and 7th of the right side.

Turning now to the tumour which had occupied this patient's neck, on the same right side, we find that it extended from the angle of the jaw downward, overlapping the clavicle; laterally it reached from the median line to within one inch of the acromion process. It was hard to the feel, and seemed lobulated, the skin was tense over it. There can be little doubt from the description and history of this tumour that it was connected in some way with the lymphatics; indeed, the opinion of Dr. Frank Hamilton was probably correct, that it was a lympho-sarcoma. I am the more strongly inclined to this opinion from the report of four similar cases by Tholen,¹ three of which, like this, were successfully treated by arsenic internally, in a manner previously employed by Billroth in two cases. Two of Tholen's cases resembled mine very closely; in the first one the tumour in the neck was so large as to interfere with the movements of the jaw. After six months' treatment with Fowler's solution, in from three to five drop doses, with occasional hypodermic injection of ten drops of the same into the tumour, it had entirely disappeared, and there was no return after two years. The second case was treated similarly, and in five months regained, nearly, its normal contour. In the third case a large bunch of glands in the supra-clavicular and axillary region yielded to arsenic at the end of two weeks, and subsequently disappeared entirely. Tholen states that benign lymphatic tumours in the neck treated in this way were not altered.

Now the deeper lymphatics are in very intimate relation with the deeper vessels and nerves, and those in the neck, which appeared to be most implicated are in very close proximity to the cervical nerves, especially the 5th, 6th, and 7th, which, as we have seen, are the ones supplying the parts to which the eruption of zoster was distributed; and the whole tumour, further, overlapped and pressed upon the upper part of the brachial plexus. I would, therefore, advance the opinion that pressure upon these, or alteration in some manner, or their irritation by the tumour, was the cause of the subsequent development of the zoster upon the arm.²

In studying the anatomical relations of the disease in this case, it first occurred to me quite strongly that the cause might be a disturbance of the

¹ Arch. für Klin. Chirurg. vol. xvii. Practitioner, Oct. 1875, p. 298.

² Lest it should occur to any that the herpes was due to the arsenic which this patient had been taking, as some writers have suggested, reporting cases where zona has appeared while using this drug, I would remind them of the far larger number of cases of shingles in patients who have never taken arsenic, and would say that my patient could hardly be considered to be under its influence, as he had taken none for full five weeks previous to the development of this eruption.

sympathetic nerve, which sends communicating branches to the brachial plexus, as the middle and lower cervical ganglia of the sympathetic are situated just where pressure could be exerted by the tumour, but reflexion has made me exclude this element for reasons which will appear later, mainly, however, from the fact that the eruption of zoster has hitherto been conclusively proven to be in relation with the spinal nerves, and as they are also in a situation to be injured by the tumour in this case, they alone must be chargeable etiologically.

It can, of course, be objected that the eruption of zona did not occur until the tumour had undergone absorption, and that, therefore, the latter could have had no effect in producing it. But it is quite possible that the active and rapid process of absorption of so large a tumour, for it had very largely disappeared after forty-five days' treatment, may have induced inflammatory changes in the parts which had formerly been compressed by it—the step between the absorptive process in a new growth and active inflammation is shorter than we are wont to realize.

Most of the observations heretofore published in regard to the etiology and pathological changes in zona have pointed to inflammation of the spinal nerves *near their origin*, and to inflammation of the *spinal ganglia*, and of the Casserian ganglion in cases of ophthalmic herpes, so that the ganglia have come to be looked upon as the *primary* seat of disease in this affection. But that this is but a single point from which to view the pathology of this interesting eruption is, I think, very evident upon study, to make which clear I will briefly allude to some facts to which I called attention, and some references which I quoted in an article some time since,¹ on "The relations of the nervous system to diseases of the skin."

Danielsen found the sixth left intercostal nerve, in thoracic shingles, swollen and reddened by a firm infiltration of the neurilemma, extending largely to the cutaneous branches of the nerve; the medullary portion was normal. Bärensprung found the intercostal nerves thickened and injected, and the same general condition has been noted by several other observers; and Haight gives a drawing of a microscopical section of a nerve in herpes zoster showing cell proliferation in and around the neurilemma, the nerves swollen, the medullary substance softened, and the axis cylinder eccentrically displaced. Charcot and Cotard found neuritis of the *cervical plexus* and corresponding ganglia of the posterior roots in a case of zona of the neck.

While, therefore, a number of post-mortem examinations of patients with ophthalmic herpes have demonstrated that the Casserian ganglion is in a state of inflammation, is of a grayish-red colour and succulent, and while

¹ Archives of Electrology and Neurology, Nov. 1874, and May, 1875. Where other references are not given the facts are quoted from this article and the references may be found in it.

in some reports concerning zoster in other regions the spinal ganglia are stated to have been inflamed, I would at the present time direct attention rather away from the ganglia to the nerves themselves, which many, if not all, the examinations have likewise shown to be the seat of inflammatory changes between the ganglia and the diseased skin; the anatomical proximity may, perhaps, in the case of ophthalmic herpes, account for the more frequent involvement of the Casserian ganglion. The weight of evidence seems to me to point to the cause of herpes zoster in a general neuritis rather than in a primary inflammation of the ganglia,¹ as the following facts show: 1. In cases such as that of Dr. Weir Mitchell's,² where severe brachial neuralgia is accompanied by herpetic eruptions, sections of the nerves which were performed for the neuralgia have shown them to have undergone certain definite changes; thus in the particular case referred to by Dr. Mitchell, "In very few of the rings of the secondary fasciculi could the axis cylinder be recognized, even with high powers, the individual nerve fibres being no longer clearly defined, but presenting a confused mass of concentric rings." 2. Cases are reported where other neural affections have accompanied, preceded, or followed herpes zoster in a manner which leaves little doubt that the eruption on the skin was closely connected with the other diseases. Thus, in two cases of shingles affecting the arm, Mr. Paget found the neuralgia to continue after the attack, and with it the fingers exhibited in a well-marked degree the features seen after an injury of the nerve, they became thin, tapering, smooth, hairless, glossy, pink, and blotched; in another case by the same gentleman necrosis and separation of a part of the jaw followed herpes of the right superior maxillary nerve. A number of instances are on record where paralysis has accompanied herpes zoster, affecting the muscles supplied by the nerves whose cutaneous branches innervated the affected skin. 3. Eruptions of herpes have been noted as following central nerve lesions, as after contusion of the vertebral column, in cancer of the vertebra, and in a case of pulmonary phthisis, with carious vertebra, where there was a collection of pus reaching into the sheaths of the spinal nerves; it has also been noted after fracture of the base of the cranium. Zoster has likewise been reported as occurring in connection with certain idiopathic diseases of the nerve centres, as chronic spinal meningitis, cerebro-spinal meningitis, locomotor ataxia, and apoplexy. 4th, and finally, zona has been frequently observed to follow very shortly after surgical operations, as M. Verneuil has par-

¹ It will be observed that I use the term "*primary inflammation of the ganglia*," for I could not deny the post-mortem evidence that the ganglia are involved, but I believe it to be *secondary* to the neuritis, as lymphatic ganglia are inflamed in lymphangitis, although I know the simile does not hold good in every respect.

² Amer. Journ. Med. Sci., July, 1874, p. 26, and April, 1876, p. 321.

ticularly noted, and as has been well shown recently in a thesis by M. Picaud.¹

I do not intend to question the fact that herpes zoster has to do with the sensitive nerves, whose fibres are ultimately gathered together and form the posterior roots of the spinal nerves, upon which are developed the ganglia, but only to indicate the improbability of a *primary* inflammation of the ganglion as a cause of zoster, unless, indeed, as before suggested, the ganglion becomes inflamed secondary to a neuritis (and this neuritis may be from the effect of cold on the terminal filaments). The impression may be, then, supposed to travel backward towards the spinal column, becoming transformed in the spinal ganglion to a trophic nerve action, which latter is transmitted centrifugally along the same nerve bundle, and produces the inflammatory disturbance in the cells of the part to which it is distributed; the difference between the normal nutrition of the part and the abnormal excitation of disease exhibits itself in the disturbed or irritated and inflamed condition of the ganglion. The subject of the influence of the nerves on normal and abnormal nutrition, or trophic nerve force, is one of very great interest and of great obscurity, and is yet far from solution. I am not aware of this explanation, which has occurred to me from the present study, having been demonstrated to be untenable, and if it has been proposed by others I have not been able to find reference to it; it finds support in Kölliker's² description of certain nerve fibres which take their origin in the spinal ganglia and proceed centrifugally with the sensitive nerves, and go to make up the complete mixed spinal nerves.

A further confirmation of neuritis as a cause of zona is found in a remarkably peculiar case of this disease reported lately by Kaposi.³ In this case the eruption affected the right arm of a woman, aged 42 years, and there had been four recurrences of the same (that is, five attacks in all) within a space of eighteen months (I see that he has still more recently recorded a sixth attack in the same patient). There were many unusual features in the case in regard to the seat, form, and development of the vesicles, etc., which I need not dwell on, but mention the case to make this single quotation: "In this case the brachial plexus in the right supra-clavicular fossa (the affected side) was swollen to the touch and painful to pressure, the pain extending along the inner surface of the upper arm to near the region of the elbow." The frequent returns of the eruption were probably due to a continued inflammation of the bundles of the brachial plexus, the cause of which we are of course as ignorant of as we are of the exciting cause of idiopathic inflammation or disease of any one organ or part of the body.

¹ Des Eruptions Cutanées Consécutives aux Lésions Traumatiques. A. Picaud, Paris, 1875.

² Handbuch der Geweblehre des Menschen. Leipzig, 1867. 5th Aufl. p. 316.

³ Wien Med. Wochenschr. Vierteljahresschrift f. Derm. u. Syph. 1874, p. 411, and 1875, p. 521.

If, now, my line of thought and illustration have been clear, I trust that I have assisted in bringing forward prominently certain facts in regard to the etiology of herpes zoster but little considered hitherto, which, together with our knowledge respecting this disease, may be thus briefly recapitulated:—

I. Whatever may be the cause of the nerve irritation, herpes zoster is always of nerve origin, that is, it is an inflammatory lesion of the skin wherein the local cell action, resulting in the production of vesicles, is but a result of nerve influence, a perverted cell action caused by perverted innervation.¹

II. From the almost constant changes found in the ganglia developed on the posterior or sensitive roots of the spinal nerves of the affected regions, we must infer that the trophic changes observed in the skin have to do with the sensitive nerves, which marks a certain advance in the study of the physiological relations of the trophic nerves or nerves of nutrition.

III. We are not to conclude, however, that zoster is the result of inflammation of the sensitive ganglia alone, for the entire nerve on the distal side of the ganglion has been always found to be inflamed, and abundant proof exists of eruptions of zoster due to various nerve lesions, peripheral and central, injuries and disease of the transmitting nerves and of the cord and encephalon.

IV. In certain cases the origin may be shown to be idiopathic inflammation of conducting nerves (as in Kaposi's case quoted), or they may be affected by pressure or other alteration caused by the presence of a tumour (as in the case given here), or the disease may be the result of surgical or other injury.

V. The origin, therefore, of herpes zoster is a direct nerve irritation and inflammation, and in ordinary, apparently idiopathic cases, the explanation of this is to be sought for in the same causes as give rise to neuralgias in general, some of which are traceable, many are not. The gouty habit, inducing neuralgia, can likewise give occasion to herpes; the direct exposure to cold of the terminal branches of a nerve, as in the head and neck or elsewhere, can cause painful excitation of the nerve itself, or neuralgia, and is equally a cause of zoster; malaria can originate neuralgia, and may not therefore some of the cases of zona be due to a malarial influence?—certainly the prompt action of citrate of iron and quinia in some cases might point to a malarial element.

¹ I do not deny the influence also of capillary congestion, but as normal nutrition is rather the result of a proper appropriating of the needed nourishment and a giving up of unneeded and effete elements by the cells of a part, so under abnormal innervation the amount of fluid called for by the cells contiguous to the bloodvessels is larger than is needed, and forms the vesicles; by a lowered vitality endosmosis of the cells of the skin is in excess, as is seen outside of the body in dead animal tissues. Vaso-motor action, being also a trophic affair, is undoubtedly likewise disturbed.

VI. In considering, then, the true nature of herpes zoster we are rather led away from the skin lesion to the antecedent neuritis, whose manifestations are neuralgia, more or less marked, and disturbances of sensation in the area of nerve distribution, represented by hyperalgesia, hyperæsthesia, and anæsthesia, while at the same time other results of nerve disturbance may occur, as paralysis of muscles, trophic alterations in the tissues, and even necrosis and separation of bone. In other words, the eruption of zoster is an epi-phenomenon to a primary neuritis and neuralgia.

VII. The clinical history and therapeutics of herpes zoster are in themselves almost convincing proofs of the neurotic nature of the disease. In most cases, especially in younger patients, the treatment is purely expectative, while in severe cases and in elderly persons the neuralgia is the principal element requiring attention, and this is remedied by measures directed to the nervous system. In the majority of instances the nerve irritation or inflammation subsides spontaneously, the whole train of morbid phenomena occupying about the same length of time taken by other self-limited inflammations, as pneumonia and erysipelas, while under certain circumstances the *sequelæ* require attention, as in other diseases. The local destruction of tissue is sometimes a troublesome feature in the way of ulceration or necrosis of the skin, or the neuralgia persists to a distressing degree even under the most intelligent treatment.

VIII. Three therapeutic agents seem to have marked control over herpes zoster, whose cutaneous manifestations as well as painful element they appear to arrest. First, phosphorus, which, used in the form of phosphide of zinc, one-third of a grain with one-third of a grain of extract of nux vomica, every three hours, will pretty certainly *abort* the disease if given early as recommended by Dr. Ashburton Thompson.¹ I should presume that the tincture of phosphorus, or what is known as Thompson's solution of phosphorus, as now used so successfully for neuralgias,² would have the same effect. I have not tried them in this disease, but have used the phosphide repeatedly and with most excellent results. Second, electricity: the galvanic current passed directly through the affected nerves, their trunks and peripheral distributions, will have the effect of causing the eruption either to abort, if used early, or will make the newly formed vesicles dry up much sooner than otherwise, and will pretty certainly check the pain. Third, quinia with iron will, I think, if pushed early in the disease, shorten the duration much and relieve many unpleasant symptoms.

Whether ergot, which has been of great service in neuralgia in the hands of some, would check this congestive neurosis I cannot say, but should hope much from it. The hypodermic injection of morphia, as we

¹ Glasgow Med. Journ., Oct. 1874, p. 460. Braithwaite, July, 1875, p. 169.

² Transactions of the Amer. Neurolog. Assoc., vol. i. p. 224. New York, 1875.

know, relieves the neuralgia, and if used early and repeatedly, might abort the disease by checking the nerve-irritation, especially if conjoined with atropia. Painting the surface with collodion or colloid coating containing morphia would serve the same purpose—some assert that it is a very valuable measure. Ordinarily the only local treatment required is protection of the inflamed surface, and this is best accomplished by powdering it with starch and keeping a single thickness of muslin firmly applied, and left on till the vesicles are dried.

In conclusion, I would, as a suggestive thought in regard to the subject of the nerve relations of the disease in question, and perhaps of other affections, mention a remark of Handfield Jones, when writing on herpes zoster:¹ "One can hardly avoid surmising," says he, "that in many cases of pleurisy with effusion the pathological action is quite the same as in pleurodynia with cutaneous vesicular eruption, only that the pleural vasomotor nerves are paralyzed, and not those of the integument."

ART. III.—*On the Catarrhal Type of Diphtheria and its Treatment by Cubeb.* By BEVERLEY ROBINSON, M.D., one of the Physicians to Charity Hospital, New York; Surgeon to the Manhattan Eye and Ear Hospital (Department of the Throat), etc. etc.

MANY writers have pointed out the fact that during the period of a prevailing epidemic of diphtheria, or during a short lapse of time previous to an outbreak, catarrhal affections with different localizations have frequently been encountered. A certain number have recognized in the catarrhal trouble, where it has become manifest upon the superior portion of the air-passages, an efficient cause of this disease. But few have been willing to affirm that diphtheria is itself an essentially catarrhal malady. And yet there are many good reasons which should incline one to this belief.

1. Diphtheria is attributable to similar causative agencies with those of catarrhal affections.

2. Their invasion is slow, their incubation long.

3. These maladies determine a "flux" upon the mucous membranes, which they affect.

4. The crisis in catarrhal affections is doubtful and incomplete.

5. The special therapeutic indications are almost similar.

6. The catarrhal affections *alone*, amongst the ordinary acute diseases, are apt to become the occasion of a chronic disease. Alone, also, they are able to raise themselves, by degrees, to *specificity*.

¹ Journal of Cutaneous Medicine. London, 1868, vol. ii. p. 132.

Such is a summary of the essential characteristics of catarrhal affections (Chauffard). Moreover, the catarrhal affections may contract at a given moment the infectious character which is not necessary to their essence. They are, then, similar to other infectious diseases, and may become the sources of contagion. Further, specific products are elaborated by them upon the mucous surfaces, which are readily carried about outside the body, and aid notably to spread the disease.¹ And Monneret² says expressly, that under the name of catarrhal diseases we must comprehend a totality of febrile diseases which depend on a general state of the organism, upon an expression called catarrhal fever. The three local maladies, the three determinations which have a particular name, wholly in being attached to a general element, are influenza, hooping-cough, and diphtheria.

In the authors quoted we see personified the conviction which points out the controlling influence of the seasons and of the special reigning medical constitution, which shows the analogy of diphtheria in its prodromic and initial symptoms, in its fully developed phenomena and march, with those so manifest in a simple attack of epidemic bronchitis. They are opposed to the germ theory of these affections, and in company with Charlton Bastian³ they recognize that organized ferments will not explain satisfactorily the rapid generation and propagation of infectious disease over widely extended tracts of country, sometimes separated from each other by great distances, in a lapse of time so brief as to be almost inappreciable.⁴ There is no necessity, moreover, to admit the existence of a ferment or contagium which is not as yet proved to be present, and to deny absolutely, without rigid research, the influence of atmospheric conditions; for amongst these conditions there are some which consist in neither the temperature, nor the barometric pressure, nor the hygrometric state of the air, and which, although they are unknown, manifest their existence no less evidently by their effects upon the living organism.⁵

Sometimes, doubtless, a catarrhal constitution is dominant, and yet during the period of its great prevalence diphtheria is but rarely seen.

This fact proves merely that the catarrhal inflammations of the throat or bronchial tubes then encountered by us have not happily taken upon themselves the specific characters of the pseudo-membranous disease.

¹ Bulletin de l'Académie de Médecine, t. xxxiv., 1869, p. 62.

² Traité élémentaire de Pathologie Interne, t. iii., p. 454, 1866.

³ Address delivered before the Pathological Society of London, April 6, 1875.

⁴ This doctrine is opposed to that held by Prof. Cætel (*Ziemssen's Cyclopædia*, vol. i.), who, in his article on diphtheria, and while he describes a catarrhal form of this disease, also fully admits the action of bacteria (micrococci) in transmitting it. In my opinion the catarrhal form of diphtheria described by Cætel resembles ordinary membranous sore-throat enough to be confounded with it.

⁵ Bergeron, Des Caractères Généraux des Affections Catarrhales Aiguës, Paris, 1872.

With respect to the anatomical signs of membranous inflammation, it may be affirmed that they are often confounded with those of a purely catarrhal one. Rindfleisch¹ notably has proved how near and complete the juxtaposition of these two so-called distinct exudative products may be found. And Hayem,² Biermer,³ and E. Wagner are not far removed from a similar belief.

Basing his therapeutical creed upon analogous views, M. Trideau, of Andouillé, commenced about ten years ago to treat all his patients attacked with diphtheria with the balsamics. At first he made use of mixtures of styrax and copaiba. Later on he administered the syrup of copaiba with cubeb. During some time past he has employed cubeb alone. Upon several occasions Trideau endeavoured to popularize his therapeutic method, and with this intention he went to Paris in 1866. His views were thought lightly of by many; they were adopted by a few, amongst whom we find Trousseau, Paul, and Bergeron. The trials made were only partially successful, and while the treatment is spoken of as excellent, some reverses are recorded. Sufficient reasons may be assigned for these failures without necessarily implicating the utility of the balsamics in diphtheria. By no one can they be more properly given than by myself, as I was house physician in Dr. Bergeron's wards when experiments were still conducted (1872).

1. The treatment was frequently begun at an advanced stage of diphtheritic toxæmia.

2. Different preparations of cubeb were employed, and some I have since found are relatively inert. The truth of this statement is corroborated by the experience of Trideau, and the experiments of Prof. Bernatzik.⁴

3. Children could not always be persuaded to take this drug.

Already I have made use of cubeb in at least 20 cases of membranous sore throat. Of these 8 or 10 presented a reunion of symptoms sufficiently characteristic to enable me to affirm they were examples of real diphtheritic infection. I have had two deaths to deplore; one, of a woman, over 60 years of age, when the disease was secondary, and treatment abandoned; the other, of a child, where death ensued in less than three days from the *debut* of symptoms, and was proximately occasioned by sudden failure of heart power. The remaining cases recovered. From them I have excluded all examples of follicular tonsillitis.

I here present brief notes of two cases, under my care during the past winter, and treated by freshly powdered cubeb. The first is an example

¹ Virchow's Archives, Bd. xxi.

² Hayem, Thèse d'Agrégation, Paris, 1869.

³ Handbuch der Specialen Path. und Therap., v. Bd. 1875.

⁴ Prager Vierteljahrs., lxxxi. 9; and Biennial Retrospect, Syd. Soc., 1867.

of ordinary membranous sore throat; the second, an instance of diphtheria.

CASE I.—R. B., æt. 5 years, a pale, delicate looking girl. I was called to see her in the morning of January 13th. Her mother informed me that she had complained of having pain in her throat during the afternoon previous, and that towards evening a small white patch was visible on one of the tonsils. She had passed a restless night, and was evidently feverish.

This morning (Jan. 13th, 9 A. M.), she showed repugnance for food; no vomiting; no motion; on palpation I found slight pain in the submaxillary region; deglutition somewhat difficult; tongue thickly coated; tonsils swollen; the left covered with a thick, rather grayish false membrane; no exudation on uvula, or pillars of fauces; nasal intonation of voice; breathing accelerated; temp. in axilla $102\frac{1}{2}^{\circ}$ Fahr.

Treatment: Pulv. cubebæ, gr. x, every two hours. 6. P. M. Skin cooler; one rather loose motion; false membrane on tonsil somewhat contracted. *Treatment*—ut supra.

Jan. 14. Decidedly better; a portion of the false membrane has disappeared from tonsil. Vomited last dose of cubeb.

Treatment: Application of tinct. of iron and glycerine (3j-3j) to fauces. Elixir calisaya, 3j, t. d. s.

15th. Membranous exudation completely eliminated; patient convalescent.

CASE II.—A coloured female nurse, about thirty years of age, caught diphtheritic sore throat from a little girl whom she had taken care of, and who died of diphtheria of very aggravated form, three days previous to her own attack. The soft palate, fauces, and tonsils of this woman were covered with false membranes of characteristic description, which partially disappeared during the progress of the disease, only to reappear again after a few hours in the same spots from which they had been once eliminated.

The submaxillary ganglia were somewhat enlarged, and moderately painful on pressure.

Deglutition was difficult. All the general phenomena of diphtheritic poisoning of moderate intensity were present, viz.: pain in the head, back, and limbs; lassitude; inability to make exertion; low heart action; rapid and feeble pulse; moderate elevation of temperature, etc. In eight or nine days from the time membranous exudation appeared upon the throat, this patient was convalescent.

How does cubeb act in diphtheria? It stimulates the mucous surfaces, 1. By direct contact where this is had; 2. By elimination, which takes place in great part through the respiratory mucous membrane, and through that of the kidney. During the latter period, there is real substitution of a slight inflammatory condition, artificially obtained, for one of like order, but natural and specific. In this way, the morbid processes often present in the air passages throughout their entire surface, are favourably modified.

Cubeb tends to arrest mucous secretions, and, on this account, membranous exudation does not reform as rapidly or abundantly. False membranes already formed lose their intimate adherence with the original

site of growth, and are resorbed, or fall into the buccal cavity and are expectorated. They also shrivel to a limited degree, and are less covered with liquid secretions. When the pseudo deposit reappears in the spot from which it has once dropped, or been resorbed, it differs considerably from the primitive one. It is changed in colour, configuration, and other properties. It is white, or of a white slightly bluish tinge, less thick and prominent, less adherent, and covers a more limited area. It has lost its disposition to extend to new surfaces, whether it be towards the larynx, or towards the nasal cavities. The above effects manifest themselves usually in about forty-eight hours from the time the exhibition of cubeb is commenced. Sometimes they are evident before the expiration of this period; occasionally three or four days may elapse before apparent results are obtained. If this medicament be employed in due season, and with persistence, rarely it will fail to effect what I have stated.

It frequently takes a week or more for *secondary* membranes to disappear entirely from the throat. They do so gradually and by small, well-defined areas, from the circumference towards the centre of a given patch. This rule is not invariable, however, for now and then a circumscribed region of mucous membrane clears itself rapidly at or near the centre of a continuous layer of pseudo-membranous deposit. Whenever a bare space appears (at times ulcerated), the mucous membrane is there rosy and of more healthy aspect than that which surrounds membranes still present, and has lost the sombre bluish tint so characteristic of diphtheritic angina. In ordinary membranous sore throat, rarely, if ever, do membranes reform immediately, or after the expiration of a few hours.

Whenever they do return, which is frequently true, they come back after the lapse of several days, and during apparent convalescence. With the reappearance of membranous exudation, febrile symptoms similar to those of the primary attack recur.

Moreover, in this affection the pseudo-membranes last but a short time. Under usual methods of treatment three or four days is the limit. By the cubeb treatment I have seen the whole process terminated in less than forty-eight hours. And in this time, also, the rapid pulse, considerable elevation of temperature (101° – 103° F.), with thickly coated tongue, and complete inappetence had gone. Taken together these are signs of differential diagnosis between ordinary membranous angina and diphtheria, which leave no room for doubt.

What are the counter-indications of this treatment?

There are none absolute. And in the great majority of cases it is perfectly innocent. It does no harm to any organ, and is productive of good to several. When the stomach is in a torpid condition, moderate doses act as a stimulant to the digestive process. And even the large doses given by me are well tolerated by many patients. At times, however, the

stomach or intestine becomes intolerant, and dyspepsia or diarrhœa may result apparently from this treatment.

In such cases I am not disposed to attribute untoward consequences solely to the use of cubeb. For it is known that it occasions constipation more frequently than diarrhœa¹ (Ricord), and we are aware that functional derangements of the alimentary canal are not infrequent in diphtheria. More than once I have witnessed repeated vomiting in the absence of other determining cause than the presence in the systemic circulation of a specific noxa. Under these circumstances I have seen one of the most popular tonics rejected (viz., tincture of the chloride of iron), although prescribed by me in an approved pharmaceutical mixture, and the cubeb mixture, hereinafter mentioned, met with no repulse.

I believe, therefore, that much of bad notoriety acquired for cubeb, on account of its nauseous taste and the intolerance manifested by the stomach, is unmerited.

This reputation properly belongs to its rival, copaiba.

Nevertheless, I would not have my readers believe that I consider cubeb to be an immaculate drug, and free from other than virtuous tendencies. It may occasion, at rare intervals, slight disturbances of different organs. That accidents, due to its exhibition, are frequent, I have no hesitation in denying positively. While, however, cubeb may not bring on digestive troubles directly, it may increase or prolong those which are pre-existent.

By decreasing the doses given, or even interrupting for a time its administration, we can usually correct such undesirable effects.

With respect to the action of cubeb on the skin, I have not remarked anything to deter one from its use. It is affirmed by Trideau that rarely it will produce a more or less general erythematous or papular rash, and that when this rash has occurred, it has usually become evident about the time the false membranes had begun to disappear from the throat. I have not observed these concomitant phenomena. The question remains, however, whether the cutaneous eruption is not rather to be desired than regretted, as showing the physiological action of the drug in an organ where, it seems to me, it may be especially useful by relieving, in some degree, the morbid effects of the disease upon the mucous linings of several viscera. And the somewhat diuretic and stimulant action of cubeb upon the kidneys is, I take it, decidedly beneficial. Certainly, I feel convinced by numerous cases closely watched, that there is nothing to be feared in this direction from the irritation produced in organs frequently much congested during the course of diphtheria. And fortunately I am able to quote the experience of another than myself to corroborate this view.

In *La France Médicale* of May 16, 1874, Dr. Reignier, of Surgères, reports a case of nasal diphtheria in a boy aged ten years, which he, two

¹ Article, Cubèbe, *Diet. de Méd. et Chir. Prat.*, t. x. p. 439.

years previously, had successfully treated by cubeb. There was an enormous quantity of albumen in the urine; and it was with the object of checking the drain from the system that Dr. Reignier, calling to mind the action of cubeb on the kidneys, prescribed that drug with a success which he was far from hoping for. He has since treated seven other cases of nasal diphtheria in a similar manner, and with a like success; and, therefore, thinks he may now, without rashness, recommend its adoption. These facts, which result from the employment of this drug in the disease under consideration, go far to prove that its action upon the kidneys in diphtheria is serviceable. Moreover, by analogy we might prejudice such effects.

Gonorrhœa is an acute affection of admitted catarrhal and specific type. In its treatment cubeb is frequently given in heroic doses from the commencement of the attack. And although I doubt the propriety of administering this drug during the primary period, when fully marked by symptoms of intensely inflammatory character, I am confident that just so soon as the *very* acute stage has become partially dissipated, and the urethral canal presents a condition of subacute congestion, its internal use is highly to be commended.

Why, then, in very like or analogous circumstances, should we fear injurious effects from the action of cubeb upon a continuous mucous surface? Further, I add, that I consider it desirable to administer powdered cubeb before albumen has made its appearance in the urine, or at all events from the first moment when it becomes manifest. In reality I am of opinion that it may be employed with many chances of success as an abortive means from the *outbreak* of the symptom which points to kidneys morbidly deranged, and before the more advanced condition of degeneration of these organs has become developed. Here, again, analogy with the *debut* of the inflammatory stage of true gonorrhœa will seemingly justify my reasoning.

Finally, I would add that cubeb has no apparent power to ward off symptoms of muscular paralysis in different organs. This we should expect, and against these we should guard ourselves by the rational practice of incorporating into our treatment, so soon as possible after the acute stage of the disease has passed, moderate, or even large doses of strychnia. In fact, I am disposed to believe, that strychnia may be given advantageously for its corroborative action upon the cardiac muscle, from the initial stage of diphtheria. The mixture employed by me most frequently is the following:—

R. Pulv. cubebæ (freshly powdered), ℥j;
 Syrupi aurantii,
 Aq. menth. pip., āā ℥jss.—M.

S.—To be taken in 24 hours, or a dessertspoonful every two hours.

This is the usual adult dose. From a fourth to a half of the above quantity may be given with propriety in the same lapse of time to a child three years of age.

I would lay great stress upon the importance of making use of the *freshly ground powder*. No other preparation of cubeb is at all so efficacious.¹

For some time past I have recommended the treatment of diphtheria by cubeb to my medical friends, and must confess that several amongst them listened at first to my declared convictions with respect to its great advantages in a spirit of very doubtful credulity. A few, although they were manifestly unwilling entirely to embrace my own faith in its efficacy, saw that it was a therapeutic method *eminently rational*, and promised, upon my earnest solicitation, to give it a fair trial at their earliest opportunity. From the latter I have already received several verbal statements, in which they expressed themselves highly gratified with their successful employment of cubeb in well-marked cases of diphtheria.

On one occasion the cubeb was given concomitantly with other drugs; on another it was administered *alone*, and at a period when other remedies previously employed had failed to accomplish good results, and the patient remained in a stationary condition.

The cases treated by my colleagues, after the manner recommended by me, recovered; and although this success was regarded by some of them as being rather an incidental than a consequent result of the treatment employed, still they all admitted that it was worthy of being more fully tested.

To all those who are in quest of a reliable remedy in the treatment, not only of diphtheria, but of every form of membranous sore throat, I can wholly recommend cubeb, given according to the above formula. It cannot be called a specific of these diseases, for it will *not always* cure. When, however, it is employed *early* in the disease, and while the pseudo-membranous exudation is still limited to the fauces, tonsils, and pharynx, it will, I am convinced, cure effectually and rapidly a large proportion of these cases.

Of course, against the possible occurrence of ultimate or secondary phenomena it will not, nor should it be expected to act either as a prophylactic or remedial agent. Whenever, too, the membranous deposit has unfortunately seated itself from the beginning in the larynx, trachea, or bronchial tubes, I believe that it will accomplish a cure in but a very limited number of cases. To hope for more than this would be to expect too much of it. And after all, where is the medicament which can be submitted to an ordeal so searching, and shall come forth victorious? Will quinia always cure a second or third paroxysm of

¹ This fact has already been insisted upon by M. Trideau.

malarial fever of pernicious type? And yet we are all inclined to look upon quinia as the nearest approach to a specific in the treatment of this malady.

Do not let us ask too much of any known substance, and because a medicament is an excellent one, let us not be disconcerted if it be not infallible.

ART. IV.—*The Efficacy of the Physiological Antagonism of Opium and Belladonna in the Treatment of Poisoning, as shown by an Analysis of 370 Cases.* By CHARLES A. OLIVER, M.D., of Philadelphia.¹

As the antidotal value of opium and belladonna is still *sub judice*, I have collected the notes of 256 cases of opium poisoning, and of 114 cases of belladonna poisoning, one half of each series being treated by use of the antagonistic drug, and have analyzed them, particularly with a view of determining the value of other modes of treatment, as compared with that by the so-called physiological antidote.

In order to more nearly approximate the truth, I have compared the results of treatment in cases where the same quantity of poison has been ingested.

TABLE I. *Opium Poisoning.*

Amount.	Belladonna treatment.			Other modes of treatment.		
	Recov'd.	Died.	Per cent. of Recover's.	Recov'd.	Died.	Per cent. of Recover's.
Under gr. j . . .	2	0	100	8	12	40
Gr. j-grs. x . . .	30	3	85	20	8	71
Grs. x-xx . . .	14	1	93	11	5	69
“ xx-xl . . .	36	1	97	17	3	85
“ xl-lx . . .	9	0	100	17	1	94
“ lx-lxxx . . .	7	1	88	10	2	83
“ lxxx-c . . .	2	0	100	4	0	100
Over c . . .	3	0	100	1	1	50
Unknown . . .	19	0	100	6	2	75

Throughout the entire table there is shown a marked difference in favour of the “belladonna treatment.”

¹ This paper is an abstract of a thesis presented to the Medical Faculty of the University of Pennsylvania, for the degree of Doctor of Medicine, March, 1876.

TABLE II. *Belladonna Poisoning.*

Amount.	Opium treatment.			Other modes of treatment.		
	Recov'd.	Died.	Per cent. of Recover's.	Recov'd.	Died.	Per cent. of Recover's.
Under gr. j . . .	1	0	100	...	...	...
Gr. j-grs. x . . .	16	0	100	13	1	93
Grs. x-xx . . .	7	0	100	6	0	100
" xx-xl . . .	7	0	100	4	0	100
" xl-lx . . .	4	0	100	4	0	100
" lx-lxxx . . .	4	0	100	2	0	100
" lxxx-c . . .	1	1	50	...	...	...
Over c . . .	3	0	100	...	...	...
Unknown . . .	12	1	92	21	6	78

The above table exhibits a difference in favour of the treatment by opium.

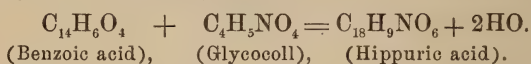
Consequently, from this method of study, there can be no doubt that, of the two treatments, the one by the use of the physiological antagonist has yielded by far the better results. The indications for the exhibition of belladonna in opium poisoning are, decreasing respiration and a tendency to profound stupor. The belladonna should be administered hypodermically, in the form of small physiological doses of atropia frequently repeated.

In belladonna poisoning, the opium seems to be useful in thwarting the effects of over-stimulation (paralysis of heart and lungs).

ART. V.—*Hippuric Acid in the Urine produced by eating Cranberries.*
By WM. KELLER, M.D., of Philadelphia.

ONE of the most interesting and also important problems in the chemical department of physiology and pathology, is the study of the changes which substances incorporated by digestion in the human system undergo during circulation. One way to find this out, and sometimes in a very striking manner, is by analyzing the urine. The first to use this mode was Professor Woehler, whilst he was a student of medicine at Heidelberg, in 1828. All his experiments were made on a little dog, which he kept for this purpose. In regard to benzoic acid, he believed it to be secreted by the kidneys unchanged, as hippuric acid was then unknown, Prof. Liebig having discovered it in 1829, a year later, in the urine of the horse and cattle. In 1842, Dr. Ure found by analyzing the

urine of a patient, who had taken benzoic acid, hippuric acid, but no uric acid. He was naturally led to believe that benzoic acid uniting with the nitrogen would prevent the formation of uric acid in the blood, and, supposing this to be the cause of gout and rheumatism, it would be the most proper remedy. Prof. Woehler drew my attention to this subject, and being familiar with benzoic acid, having prepared it many times, and not believing that it could produce hemorrhage of the lungs, as it was then asserted in the books of materia medica, I took in the evening, before going to bed, two grammes of benzoic acid without any inconvenience, having first emptied the bladder. My urine in the morning contained the hippuric acid according to expectation, what is now easily understood by looking at the following formula :—



I was able to repeat this experiment at pleasure with impunity.

In the course of time, by adopting this mode of experimenting, it was found, that benzoic ether, essential oil of bitter almonds, amygdalinic, cinchonic, and cinnamomic acid turn also in this way into hippuric acid, and it is likely that some other substances of that kind will be discovered in time. Also hippuric acid may appear in larger quantities in the urine as a pathological production. I have seen it myself once, in characteristic crystals, by the naked eye, in a deposit of brick-dust colour in the scanty concentrated urine of the morning of an American lady in Germany, affected very seriously by acute bronchitis.

The expectation, that the formation of uric acid could be prevented by the use of benzoic acid, was not realized, as I found it always in that urine, what was particularly mentioned in a preliminary notice at the meeting of the learned society of Göttingen in June, 1842, by Prof. Woehler; so it was in my paper on the subject in Woehler's and Liebig's *Annals of Chemistry*. Therefore Prof. J. Vogel, stating, in the *Anleitung zur qualitativen und quantitativen Analyse des Harns*, p. 290, 7th edition, that it was sufficiently proved that Ure and Keller were mistaken in asserting that the formation of uric acid could be prevented by taking benzoic acid, must have forgotten that he had learned the contrary fact first by my experiment.

Knowing that a number of fruits, which contain some of the mentioned substances, like the prunes, the greengages, the berries of *vaccinium vitis idæa*, and of *rubus chamæmorus*, produce hippuric acid in the urine, I wished to learn what effect our cranberries, the fruit of *oxycoccus vaccinium*, *vaccinium macrocarpon* Atiton, would have in this respect; therefore the urine of the morning of several children from 6 to 16 years of age, who had taken for supper a jam, prepared from about a quart of cranberries, passed through a sieve, and a pound of sugar, was evaporated and examined for hippuric acid. It yielded 2 clusters weighing 20 grains. If this

had been my main object, I could have got more; but supposing cranberries to contain malic acid, and knowing that, at least malate of lime taken internally will produce succinic acid in the urine, my aim was to find it here; but in this respect I was disappointed, as even the extract by ether showed, by evaporation under the microscope, nothing but the characteristic crystals of hippuric acid.

ART. VI.—*A Contribution to the Pathology of Epithelium.* By ARTHUR VAN HARLINGEN, M.D., Chief of the Skin Clinic, Hospital of the University of Pa. (With illustrations.)

The Epithelium in Seborrhœa, Psoriasis, and Eczema.—The microscopic examinations of epithelium, of which notes are here given, were made some time since. I had originally undertaken them with the view of gaining some practical aid in the differential diagnosis between seborrhœa, psoriasis, and eczema,¹ as these affections are found occurring in the scalp. When they involve other portions of the body at the same time as the scalp, it is comparatively easy to distinguish between them. When, however, they are found in the latter locality alone, the diagnosis often becomes a matter of considerable difficulty.

The product of disease consists in each case chiefly of epithelial cells, mingled to a greater or less extent with the local glandular secretions, and although, in typical cases, the colour and lustre of the epidermic masses, their arrangement, whether in patches or generally diffused, and the like naked eye appearances might serve in making a decision, yet it appeared probable that in a certain number of instances, where these signs might fail, much aid could be obtained by a microscopic examination. It would seem plausible that, as in extreme and typical cases such difference in gross appearance is presented, so in like manner the microscopic structure of the constituent elements should present peculiarities in each disease which should be characteristic, and that these peculiarities should prove decided, invariable, and easily ascertained. But the differences in structure should be apparent upon microscopic examination, even in non-typical and uncertain cases, where the gross appearances might not be distinctive of the disease; the microscope, therefore, should serve and might be made to aid in the diagnosis of these affections in practice.

In the course of the investigation, however, the number of examinations multiplied and were extended beyond the limit originally laid down, so that they included the epithelial product in various other diseases. The

¹ I refer, of course, to the squamous form of eczema, and to the dry form of seborrhœa.—S. sicca.

idea then suggested itself of extending the range of research, until it should embrace an examination and comparison of the appearances of the epithelium in all those affections of the skin in which this plays a prominent part.

Circumstances have thus far prevented my carrying out the plan proposed to its entire extent, and I think it better to publish the notes of examinations already made, although these extend only to a limited number of diseases, than to postpone making them known until an opportunity occurs of completing the investigation. I present, therefore, in this paper, the notes of microscopic examinations of the product of disease in seborrhœa, psoriasis, and eczema. This product being almost entirely epithelial, it was the study of the epithelial cells which engaged my attention.

For purposes of comparison, I have arranged the appearances noted under the nine heads following, in order :—

1. General appearance of the product of disease.
2. The reagents employed, and the microscopic power used. (The latter when not specified was an ordinary objective of one-fifth of an inch focal distance with a low eye-piece, giving an amplification of between 237 and 250 diameters.
3. The facility with which the cells absorbed the staining fluid.
4. The diameter of the cells.
5. Nature of the cell contents (granular, oily, etc.).
6. Outline of the cells, whether smooth or irregular, their shape, their tendency to flatness or curling at the edges.
7. The presence or absence of nuclei together with the general appearance of these.
8. The connection between the cells, whether close and firm or loose.
9. Presence or absence of granular matter, debris, etc. in the microscopic fields, extraneous to the cells.

The notes of examinations given below will generally be found to include some record under each of these heads. Occasionally, when the examination has not been made complete, or in many cases where a full history has been wanting, the case has nevertheless been placed upon record as being sufficiently characteristic for the purpose.

I will now proceed to give the results of examination in various cases of seborrhœa of both head and body, including not only typical instances, but some where the appearances were not altogether characteristic. The first case given is one of typical aspect and average duration involving both head and body, the subsequent ones will be seen to vary as regards the different conditions, of duration, severity, age of patient, and the like.

CASE I. *Seborrhœa Corporis et Capitis*.—J. H., age 41. Disease of some years' standing. Ordinary "dandruff" of the scalp, and a patch of seborrhœa the size of the palm over the sternum. *Body*. Scales taken

from the diseased patch were yellowish, oily looking, adherent, and could be made into a ball between the thumb and finger. *Microscopic examination.* Treated with water and aniline, coloured well, though the staining material penetrated with difficulty owing to the amount of oily matter present. Apparently two sets of cells, a larger varying between .0256 mm. and .0384 mm., averaging .0307 mm., and a smaller not measured. Cell contents decidedly granular with occasional distinct oil globules. Edges thin and flat; not inclined to curl or fold up. Nuclei common, sometimes shrunken and containing what seemed to be a vacuole. The place of the nucleus was frequently occupied by a lighter circular area. Considerable granular matter in field.

Scalp. Scales pearly-white, thin, and easily separable. *Microscopic examination.* Treated with aniline and water, the cells coloured well. Average diameter .0333 mm., though some were much smaller. Cell contents rarely granular. Outline usually distinct, with little tendency to curling on the edges. Large bright nuclei common. Cells loosely connected. Little granular but considerable oily matter in field.

CASE II. *Mild Seborrhœa Capitis.*—J. V., age 76. Slight "dandruff" of the variety usual in aged persons. Of many years' standing. Scales pearly-white, tending to aggregate in small flakes, and coherent. *Microscopic examination.* Cells seemed thin and small; their diameter was not measured. Few possessed a nucleus. They showed a decided tendency to roll together and curl on the edges. No granular matter in field.

CASE III. *Severe Seborrhœa Capitis.*—Emma N., age 17. Has had "dandruff" ever since she can remember. Much worse during past year. Scalp thickly covered with characteristic eruption. The scales presented the usual pearly, greasy lustre, and tended to cling together. *Microscopic examination.* Treated with aniline; the cells coloured well. Diameter not noted. Cell contents usually granular. Outline smooth and regular. Cells presented a succulent appearance as if recently formed. Nuclei common. Considerable granular matter in field.

CASE IV. *Severe Seborrhœa Capitis.*—H. McK. Disease of twelve years' standing. Scalp covered with characteristic scales. *Microscopic examination.* The scales were macerated in ether for some weeks, and were then treated with water and carmine, colouring fairly well. Diameter of cells averaged .0333 mm. Contents not distinctly granular. Outline distinct and regular; no tendency to curl on edges. Large distinct nuclei (or nuclear spaces) common; showing no colour with carmine but remaining light and clear with heavily tinted borders.

CASE V. *Seborrhœa Faciei et Capitis.*—No history. *Microscopic examination.* *Face.* Treated with water and aniline, cells stained poorly, outline regular and no curling at edges. Few nuclei, and those only dimly outlined. Little or no granular matter in field. *Scalp.* Treated with aniline, cells stained deeply. Nuclei tolerably frequent. No granular matter in field.

CASE VI. *Seborrhœa Corporis.*—D. Wilson, severe acne faciei, with seborrhœa of the body. Scales adherent. *Microscopic examination.* Cells thin, transparent, dry looking, irregular in outline. No nuclei. Cells usually flat.

CASE VII. *Seborrhœa Corporis.*—No history. Two kinds of scales were taken for examination, one large and compact, the other small, loose, and friable. *Microscopic examination.* Macerated in ether for four

weeks. Treated with water and aniline. Diameter of cells varied between .0333 mm. and .0384 mm. Cell contents not granular. Outline generally smooth and regular, few cells curling on edges. A few cells contained a large, bright area, instead of the usual nucleus; many contained a small, faint, light area. Nuclei uncommon. In one cell a central dark spot was observed, with a bright areola.

CASE VIII. *Seborrhœa Corporis*.—No history. *Microscopic examination*. Examined with water and aniline. Rather lighter colour than usual. Diameter averaged .0332 mm. Contents of cells decidedly granular; in some cases there was apparent fatty degeneration. Many cells polygonal in shape, others irregular. Outline according to drawing smooth and regular; some cells curled upon edge. A number had faint nuclei. Connection between individual cells not very close, they were separated without much difficulty. Little granular matter in field.

On comparing the results of examination in the above cases, one is struck by the fact that the product of disease in *seborrhœa capitis*, that is the epithelium, presents microscopic characters quite different from those shown by the epithelium in *seborrhœa* of the body. The following table will show these differences:—

<i>Seborrhœa Capitis.</i>	<i>Seborrhœa Corporis.</i>
1. The cells stain deeply.	1. The cells stain poorly, possibly on account of oily matter in the field.
2. Average diameter .0333 mm.	2. Average diameter .0256 mm. to .0384 mm.
3. Contents only occasionally granular, and then very indistinctly so.	3. Contents highly granular, excepting in one case when ether was used.
4. Outline distinct and sharply defined. Usually flat, occasionally curled.	4. Outline frequently indistinct. About same as to flatness.
5. Nuclei common, large and distinct. Usually light, but in one case stained darkly.	5. Nuclei rare and faint. Occasionally their place seemed to have been taken by an oil globule; in other cases the minute nucleus was surrounded by a bright halo.
6. Occasionally granular matter in field.	6. Usually granular matter in field.

The following cases of psoriasis were examined in the same manner as those of *seborrhœa* just given.

CASE IX. *Psoriasis Corporis et Capitis*.—L. E., age 38. Typical case of generalized inflammatory psoriasis. *Body*. Scales taken from the forearm appeared yellowish-white with a dry, pearly lustre, were quite friable, disintegrating easily. *Microscopic examination*. Treated with water and aniline, the cells coloured well. Diameter varied between .0256 mm. and .0384 mm. They were, for the most part, small cell contents, not granular. Cells flat, not curling on edges. Outline usually smooth and regular, sometimes more or less jagged, edges not thin. Nuclei uncommon, usually small and indistinct, occasionally containing a central granule or nucleolus. Cells loosely connected. No granular matter in field. *Scalp*. Scales resembled precisely those taken from the body. They were yellowish-white and friable, but not quite as dry and powdery as the latter, owing probably to their admixture with sebaceous material. They were easily compressible under the glass cover, showing some oily streaks. *Microscopic examination*. Treated with aniline,

cells coloured well. Diameter varied between .0282 mm. and .0410 mm., usually small. Cell contents granular, not at all like fatty degeneration. Outline of cells usually smooth, occasionally thin and jagged. Decided tendency to fold together, and curl on the edge. Nuclei unusual, and when present commonly indistinct. Occasionally large, bright nuclei were observed, but these were rare. Cells loosely connected. Considerable granular matter in field.

CASE X. *Psoriasis Corporis et Capitis*.—J. A., age 66. An average case as to duration and appearance. *Microscopic examination*. *Body*. Treated with aniline and water, the cells coloured well. Diameter varied greatly, ranging from .0250 mm. to .0501 mm. Nuclei unusual and small. Some cells polygonal and regular in outline, most irregular, curled and folded on edges. Little granular matter in field. *Scalp*. Cells coloured pretty well. Diameter varied between .0395 mm. and .0501 mm. Cells generally transparent; a few had granular contents. Outline usually smooth and distinct, occasionally folded or curled on edges. Nuclei rare, small, and indistinct. Considerable granular matter in field.

CASE XI. *Psoriasis Corporis et Capitis; chronic*.—Kate R., age 21. Generalized psoriasis, mild and non-inflammatory. Three years' duration. *Microscopic examination*. *Body*. Treated with aniline and water, cells coloured well. Diameter varied between .0282 mm. and .0435 mm. Cell contents faintly granular. Cell outline smooth, occasionally curled on edges. Nuclei rare, small, and faint. *Scalp*. Coloured poorly. Average diameter .0280 mm. Cell contents decidedly granular. Outlines jagged. Flat, not curling on edges. Nuclei very rare. Not much granular matter in field.

CASE XII. *Psoriasis Corporis et Capitis*.—Kate F., age 29. Average case of inflammatory psoriasis. *Microscopic examination*. *Body*. Treated with water and aniline, coloured poorly. Smaller cells averaged .0307 mm., larger .0384 mm. in diameter. Contents not granular. Outline indistinct, curling on edges. Nuclei tolerably frequent, small, and pale. Cells closely adherent. No granular matter in field. *Scalp*. Cells coloured well. Average diameter .0333 mm. Contents not granular. Outline smooth and distinct. Many cells showed small, pale nuclei. Connection loose. Considerable granular matter in field.

Comparison of the foregoing notes of microscopic examinations in psoriasis, gives the following characters as tolerably constant: The usual appearance of the scales is more yellowish than those of seborrhœa, particularly the pearly-gray scales of *S. capitis*. They were ordinarily quite dry, friable, and almost powdery, occasionally, however, cohering with very considerable tenacity. The scales from the body were particularly dry, contrasting strongly in this respect with the oily, almost waxy appearance of the scales in *S. corporis*. Sometimes the cells took colour very well, often, however, they stained slightly, if at all. They were evidently less succulent than the cells of seborrhœa. The cells varied considerably in size, ranging from .0250 mm. to .0501 mm. in diameter. Two sizes were usually noted, a smaller, averaging .0250 mm. to .0307 mm., and a larger, averaging .0384 mm. to .0501 mm. The scales from the scalp contained, perhaps, the greater proportion of large cells. As regards cell contents, these were noted in one case as being granular, in

the others as faintly or not at all so. Certainly, nothing even remotely suggesting fatty metamorphosis could be observed. The cell outline was frequently irregular, with thin, indistinct, or jagged edges, though these were occasionally smooth and regular.

The cells in psoriasis corporis are generally flat, though occasionally curled and folded together; those from psoriasis capitis commonly show the latter aspect. Nuclei are rare, and when present are, with rare exceptions, small and indistinct. Considerable granular matter is observable through the microscopic field in psoriasis capitis, very little in P. corporis.

The following cases of eczema were examined in a manner exactly similar to that pursued in seborrhœa and psoriasis.

CASE XIII. *Acute Eczema Erythematosum Capitis et Corporis*.—J. C., age 65. Disease of some weeks' duration, generalized, almost universal, presenting the usual appearances. *Microscopic examination.* *Body.* Treated with water and aniline, cells coloured well. Diameter varied between .0307 and .0384 mm.; contents usually faintly granular. The uses of a higher power $\times 1000$, showed the granular appearance to be due to wrinkling of the surface. No oil globules observed. Outline thin and not well defined. Cells usually flat, though some curled on the edge. Very few cells contained nuclei, and these were small. Occasionally a small dark point surrounded by a bright ring was observed. Cells easily separated. No granular matter in the field. *Head.* Cells coloured well. Size varied a good deal, smaller cells averaged .0307, larger oblong ones .0307 mm. by .0538 mm. Contents markedly granular. Cells quite flat, usually looked thick with smooth outline, occasionally thin with jagged edges. Nuclei rare and indistinct. Much granular matter in the field.

CASE XIV. *Eczema Squamosum Capitis*.—E. C.; no history. *Microscopic examination.* Cells thin and transparent, smooth and regular outline. Curled on edges in many cases. Distinct nuclei common. Connection of cells loose. Considerable granular matter in field.

CASE XV. *Eczema Squamosum Capitis*.—Julia L., age 18 months. Has suffered some months with impetiginous eczema, generalized over body. On head has recently assumed the squamous form. *Microscopic examination.* *Scalp.* Cell contents not granular. Cell outline distinct and smooth; curled and folded on edges. Nuclei rare and indistinct. Little granular matter in field.

Comparing the results of examination in these various cases of eczema, we find the following characters common to all, or nearly all. The cells were transparent, and took colour well. In only one case (eczema erythematosum) was their size accurately measured. In this case there seemed to be two varieties of scales, one composed of more or less regularly polygonal cells, the other of irregularly oblong cells. The former were the smaller; their diameter averaged .0307 mm. The oblong cells averaged .0538 mm. in length by .0307 mm. in width. The larger oblong cells from the scalp in this case were noted as granular, but in no other case were such contents noted. This may therefore be regarded as for some reason exceptional, and the epithelial cells in eczema may be stated to be transpa-

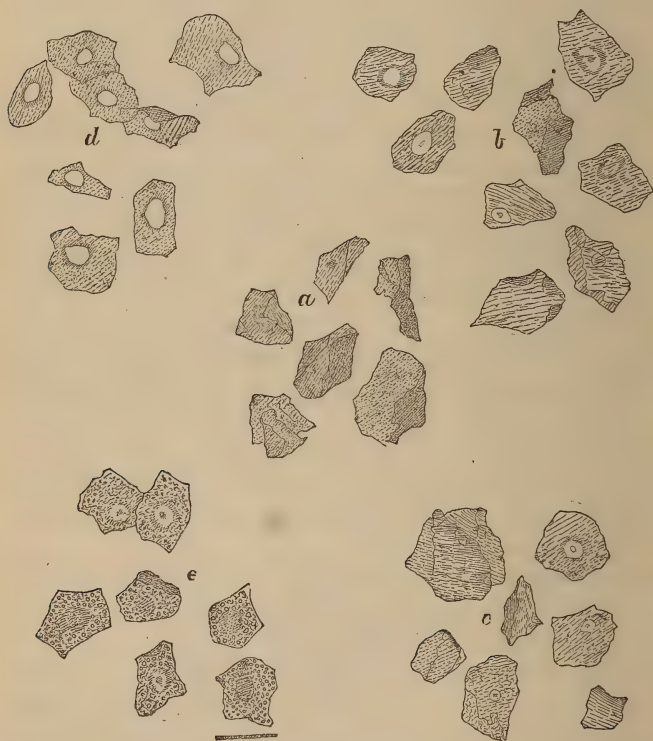
rent, and without oily or granular contents. In outline the cells were sometimes thin, irregular and jagged; in one instance, the exceptional one named, they were smooth and thick. In the latter case the cells were flat, in all the others folded and curling. Nuclei were faint and rare; in the case particularly alluded to above, the nucleus was frequently small and surrounded by a halo. The cells did not adhere. There was granular matter in the field in the cases of *eczema capitis*, but not in those of *E. corporis*.

Examining collectively the results of the investigations given above, with a view to comparing the relative character of the affections under consideration, it will be seen that they naturally fall into two classes. The first includes *psoriasis capitis* and *corporis*, *eczema capitis* and *corporis*, and *seborrhœa capitis*; the second is represented by *seborrhœa corporis* alone. The product of disease in the first class consists of epithelial cells and granular (sebaceous) matter; the cells for the most part derived from the epidermic layer of the skin. In each of the diseases belonging to this class, the epithelium resembles that found in the others, while at the same time it preserves certain slight but distinct characters of its own. In *psoriasis* the cells are yellowish, dry, staining with difficulty, and presenting contents faintly or not at all granular. Nuclei are rarely present, and are pale and indistinct. There is, in addition, a tendency to curl on the edges. The cell outline is jagged and irregular. In *eczema*, the cells are transparent, smooth, stain fairly, and present no granular contents. The cell outline is thin and irregular. Nuclei are faint and rare. In *seborrhœa capitis*, the cells are smooth and regular in outline, stain deeply, only occasionally present granular contents and these are indistinctly so. Unlike either of the other varieties of epithelium, the cells in *seborrhœa capitis* possess large and distinct nuclei.

The general resemblances and differences noted seem to suggest the probability that these cells are, in the case of each separate disease, the product of a different layer of the epidermis. Thus, *psoriasis* probably involves only the most superficial layers of the epidermis, including for the most part those cells whose life is nearly expended, whose nucleus is gone, and whose protoplasm has lost its succulency. (See illustration.) *Eczema* penetrates to a deeper layer, the cells involved are full and smooth on the edge, not contracted and jagged as in *psoriasis*. Their protoplasm is still active, it becomes stained with aniline, and a nucleus is more frequently observed. Finally, the cells of *seborrhœa capitis* are still more full of life, the nucleus is more common, the protoplasm more active, staining deeply under the influence of the colouring material. I am not prepared to say that the epithelium in *seborrhœa capitis* is derived from a deeper layer of the epidermis than that in the other affections examined, but that it comes from the lining portion of the sebaceous ducts, in part at least, is evident from the fact that on lifting an adherent scale of *seborrhœa*, one is able

at times to perceive that it includes an exact cast of the funnel-shaped opening of the sebaceous duct.

I must at this point express a doubt, suggested by the results of these examinations, as to the propriety of calling this affection *seborrhœa* at all. It does not consist essentially in an excessive flow of abnormal sebum, but in the exfoliation of epidermis, mingled indeed with sebaceous matter to a greater extent, perhaps, than is the case in the other squamous affections of the scalp, but nevertheless presenting epidermis as its principal pathological product.



a, Normal epithelium; *b*, psoriasis capitis; *c*, psoriasis corporis; *d*, seborrhœa capitis; *e*, seborrhœa corporis.

More truly a *seborrhœa* is the affection which I have placed in the second class. *Seborrhœa corporis* presents indeed so peculiar an aspect that I must give a few words to a description of the eruption itself. It consists essentially in certain circumscribed patches of light or dark-yellow greasy scales, usually found upon the chest or upper part of the back, easily detached from the skin underneath, leaving a red shining and greasy surface. Examined microscopically, the scales are seen to contrast strongly with those of *seborrhœa capitis* (see illustration). They stain poorly, partly

on account of the excess of oily matter always present in the field. The contents of the cells are highly granular in all cases; the outline of the cells is flat and indistinct; nuclei are rare and faint; there is usually a large quantity of granular matter in the field. These cells may in fact be regarded as in a state of fatty metamorphosis, and as directly derived from the sebaceous glands, and the affection has evidently a much closer affinity with *seborrhœa oleosa* than with the affection known as *seborrhœa sicca capitis*.

ART. VII.—*A Contribution to our Knowledge of Beef-tea.* By HORACE BINNEY HARE, M.D., Physician to the Episcopal Hospital, Philadelphia.

THE general use which has been made of the various forms of beef-tea, and the difference of opinion with regard to its value, seem to me to justify the belief that some addition to our knowledge of the composition of the forms most commonly in use will be of interest to the profession.

While working in the Chemical Laboratory of the Pathological Institute in Leipzig, under the direction of Professor F. Hofmann, I was led to make certain analyses of what is commonly known as Beef Extract made according to the receipt given below. During the past winter I pursued the investigation further, and now present the results of my analyses.

As will be seen by a glance at the tables, only the amount of albumen and salts was directly estimated, while the figures given under "other organic matter" were obtained by subtraction of the albumen known to be present from the amount of organic matter found by incineration.

In the soups made without heat no gelatin was to be expected, and in the others, if any was present, which is to be doubted, it has been estimated together with the albumen and colouring matter.

The method of analysis employed, chosen after some experiment, was the same in each case. After the preparation of the soup, a weighed quantity of it was treated with a large excess of alcohol, enough in each case to precipitate the albumen completely. The mixture was allowed to stand twenty-four hours, then filtered, the albumen dried and weighed, then incinerated, and the weight of the ash subtracted. When the soup contained fat, which was, however, the case only when heat had been employed in its preparation, this was carefully removed after the liquid had grown cold and before the analysis was begun.

Another portion of the soup was weighed, evaporated to dryness, and the solid matter thus obtained. The solid matters incinerated gave the relative amounts of organic and inorganic matter.

In Table A will be found the results of the analysis of what I have termed Beef Extract, which was prepared, according to the usual receipt, as follows: Meat which had been as far as possible deprived of its fat and tendinous matter, by scissors, was cut up in very small pieces, weighed, and placed in a jar loosely stoppered. This jar was then placed in a vessel containing cold water, which was gradually brought to the boiling point.

TABLE A.—*Analysis of Beef Extract.*

	I.	II.	III.	IV. Average.	
Grammes, meat	699	362	450	795	
“ soup	245	152	179	267	
Composition of soup—					
Water	92.90	93.72	92.62	92.57	92.95
Solids	7.10	6.28	7.38	7.43	7.04
100 parts solids—					
Organic	78.88	79.53	80.84	81.40	80.16
Salts	21.12	20.47	19.16	18.60	19.84
100 parts soup—					
Water	92.90	93.72	92.62	92.57	92.95
Albumen and coloring matter	1.71	1.39	1.60	1.18	1.47
Other organic matter	3.90	3.61	4.37	4.87	4.18
Salts	1.49	1.28	1.41	1.38	1.39
Extracted from 100 parts meat—					
Albumen and colouring matter	0.59	0.58	0.63	0.39	0.54
Other organic matter	1.36	1.51	1.73	1.63	1.55
Salts	0.52	0.78	0.56	0.46	0.58

When the meat had lost its red colour and become blanched—a result usually obtained at the end of two hours—it was removed, thoroughly pressed, and the fluid which was obtained, added to what had collected in the jar, passed through a hair-sieve. This soup has an extremely pleasant taste, and is, as is well known, much relished by patients. It is comparatively rich in the salts of meat, poor in albumen, and, as can be seen by reference to the table, extremely expensive, 100 parts of meat yielding but 36.54 parts of soup. As in the other tables, the amount of each ingredient obtained from 100 parts of meat is given, that the relative expense of the different soups may be seen.

The beef-teas of which the analyses are given in Table B. were made according to the receipt of Dr. Pavy, which varies hardly at all from that of Dr. Letheby, excepting that more heat is likely to be applied under the directions of the latter, and a soup obtained having, if possible, less value.

As will be seen by the tables, varying quantities of water were employed, but Number III. is the analysis of a soup prepared according to the directions in Dr. Pavy's book.

I give the receipts of these two gentlemen with their remarks.

TABLE B.—*Analysis of Pavy's Beef-tea.*

	I.	II.	III.
Grammes, meat	367	450.5	363
“ water	753	530.3	364
“ soup	799.8	679.6	512
Composition of soup—			
Water	97.32	96.71	97.38
Solids	2.68	3.29	2.62
In 100 parts solids—			
Organic	82.40	80.12	80.55
Salts	17.60	19.88	19.45
In 100 parts soup—			
Water	97.32	96.71	97.38
Albumen and colouring matter	0.81	0.74	0.98
Other organic matter	1.40	1.89	1.13
Salts	0.47	0.66	0.51
From 100 parts meat—			
Albumen and colouring matter	1.76	1.11	1.38
Other organic matter	2.99	2.85	1.32
Salts	1.01	0.99	0.72

Dr. Letheby¹ says :—

“The richest of all soups is obtained from finely chopped lean meat, soaked for an hour or so in an equal weight of cold water, and then gradually raised to the boiling point. After simmering for about a quarter of an hour, it should be pressed and strained from the insoluble muscular fibre. In this condition it contains the whole of the soluble constituents of meat, amounting to about five per cent. of the meat used; so that a pint of soup from a pound of meat contains just four-fifths of an ounce of meat extract.”

Dr. Pavy² gives a similar receipt :—

“Mince finely one pound of lean beef, and pour upon it, in a preserve jar or other suitable vessel, one pint of cold water. Stir, and allow the two to stand for about an hour, that the goodness of the meat may be dissolved out. Next stand the preserve jar or other vessel in a saucepan of water, and place the saucepan over a fire or a gas stove, and allow the water in it to gently boil for an hour. Remove the jar, and pour its contents on to a strainer. The beef-tea which runs through contains a quantity of fine sediment, which is to be drunk with the liquid after being flavoured with salt at discretion. The jar or other vessel in which the beef-tea is made may be introduced into an ordinary oven for an hour, instead of being surrounded by the water in the saucepan. Beef-tea thus prepared represents a highly nutritive and restorative liquid, with an agreeable rich meaty flavour. It is a common practice amongst cooks to make it by putting it into a saucepan, and boiling it or simmering it over a fire; but the product then yielded constitutes in reality a soup or broth instead of a tea.”

He also states that “all that is wanted is that the cold infusion should be heated to about 170° Fahrenheit. This just suffices to coagulate the albumen and colouring matter, and thus deprive the product of its character of rawness.”

This is true; but it is far better to deprive the soup of its raw character when we can preserve the albumen. This cannot, as far as my experience goes, be done without first removing the meat from the soup.

If this is attended to, we get the soup of which the analyses are found in Table C.

¹ On Food, by H. Letheby, M.A., Ph.D., etc., 2d edition, New York, 1872, p. 170.

² A Treatise on Food and Dietetics, by F. W. Pavy, M.D., F.R.S., London, 1874, p. 511.

TABLE C.—*Analysis of Cold Extract of Beef.*

	I.	II.	III.	Average.
Grammes, meat	338	393	449	
“ water	340	393	449	
“ soup	355.2	470	464	
Cubic centimetres, soup			455	
Composition of soup—				
Water	96.09	96.70	95.53	96.11
Solids	3.91	3.30	4.47	3.89
In 100 parts solids—				
Organic	86.87	84.39	88.28	86.51
Salts	13.13	15.61	11.72	13.49
In 100 parts soup—				
Water	96.09	96.70	95.53	96.11
Albumen and colouring matter	2.53	2.78	2.56	2.545 ¹
Other organic matter	0.87		1.31	0.82 ¹
Salts	0.51	0.52	0.52	0.516
From 100 parts meat—				
Albumen and colouring matter	2.65	3.32	2.64	2.645 ¹
Other organic matter	0.92		1.35	1.12 ¹
Salts	0.57	0.62	0.53	0.55

It is not uncommonly used, and is mentioned by Lady Barker in her little work on cookery.

The best method for obtaining this is, I believe, the following :—

A pound of meat, previously freed from fat and tendinous matter (for which purpose scissors will be found very convenient), is cut in small pieces, by a sausage-meat cutter when possible, and then allowed to stand covered with its own weight of water. The meat and water should be stirred from time to time, and kept in a room at the ordinary temperature. Heating the mixture moderately, hastens the process, though it has no other advantage, and has to be done with so much care that in ordinary hands it had best be avoided. At the end of two hours, or when the meat seems blanched, the clear red fluid is poured off, the meat thoroughly pressed in a cloth, or, when much has to be made, in a small press such as is used by druggists, the fluid from the meat added to that previously poured off, and the whole brought just to the boiling point. When boiled, the albumen shows a tendency to form a large clot. This must be broken up by rapid stirring with a fork. When allowed to stand we have a clear fluid of a pale yellow colour, at the bottom of which lies a quantity of very finely divided albumen. Before pouring the soup out for use it must, of course, be thoroughly stirred.

¹ Average of I. and III.; owing to accident, the albumen was not determined directly in II.

TABLE D.—*Analysis of Cold Extract of Beef with 50 per cent. Additional Water.*

	I.	II.	Average.
Grammes, meat	448	458.7	
“ water	672	668	
“ soup	592 ¹	720.8	
Cubic centimetres, soup	580	715	
Composition of soup—			
Water	96.22	96.16	96.19
Solids	3.78	3.84	3.81
In 100 parts solids—			
Organic	87.	88.27	87.635
Salts	13.	11.73	12.365
In 100 parts soup—			
Water	96.22	96.16	96.19
Albumen and colouring matter	2.39	2.38	2.385
Other organic matter	0.89	1.01	0.95
Salts	0.49	0.45	0.47
From 100 parts meat—			
Albumen and colouring matter	3.16 ¹	3.74	3.45
Other organic matter	1.17 ¹	1.58	1.375
Salts	0.64 ¹	0.71	0.675

TABLE E.—*Analysis of Cold Extract of Beef with 100 per cent. Additional Water.*

	I.	II.	III.	Average.
Grammes, meat	456.2	407	405	
“ water	919.5	814	810	
“ soup	954	792	810	
Cubic centimetres, soup	950	790	800	
Composition of soup—				
Water	97.01	97.31	97.33	97.216
Solids	2.99	2.69	2.67	2.783
In 100 parts solids				
Organic	86.70	87.90	87.06	87.22
Salts	13.30	12.10	12.94	12.78
In 100 parts soup				
Water	97.01	97.31	97.33	97.216
Albumen and colouring matter	1.87	1.41	1.68	1.653
Other organic matter	0.72	0.96	0.65	0.776
Salts	0.40	0.32	0.34	0.353
From 100 parts meat—				
Albumen and colouring matter	3.91	2.76	3.36	3.343
Other organic matter	1.50	1.62	1.30	1.473
Salts	0.84	0.62	0.68	0.713

As regards taste, the soup is by no means inferior to that made with water and heat, although it is in this respect in no way comparable to that made, as in A, without water.

In order to see whether it was possible to decrease the expense of the beef-tea without impairing its nutritive properties, I have tried varying proportions of water, as will be seen by reference to Tables D and E. In D, the meat was treated with one and one-half times its weight of water ;

¹ I. was pressed less than II., and hence a less yield for the beef employed. The loss in albumen, etc., is nearly proportional to that in the quantity of soup.

in E, with twice its weight. The results are given, and from them I should prefer to use one and one-half pounds of water for each pound of meat, the process of preparation being precisely that given under C.

Although containing a vastly greater amount of albumen than the beef-extract A, this beef-tea contains less salts and extractives. In order to supply its deficiencies in this respect, and at the same time increase its percentage of salts, I would suggest the addition of a given amount of Liebig's extract. This, as is well known, contains no albumen and as little gelatin as possible, but is rich in salts and in organic matters.

Its percentage composition, as given by Letheby, is—water, 18.56 ; extractives, 59.36 ; salts, 22.08. The percentage of inorganic salts in the beef-tea made without water, which may fairly be taken as a standard of flavour, is 1.39, and of organic matters not albumen 4.18. If, therefore, we add to 100 parts by weight of soup, made as in D, about 5 parts of Liebig's Extractum Carnis, we get a soup containing about 1.4 per cent. salts and nearly four per. cent. of organic matter not albumen, in addition to the 2.3 per cent. of albumen. The addition of Liebig's extract improves the colour and adds to the flavour—both matters of importance.

To accomplish this result it would be necessary to add to every pint of beef-tea, made according to D, about six drachms of Liebig's South American extract. Of course, any other proportion may be used, and any desired amount of salts and extractives be administered. I may mention that a drachm of Liebig's Extract filled an ordinary teaspoon, which I used, level with the edge.

Liebig's beef-tea, the formula for which is taken from Dr. Pavy, is made as follows :—

Take half a pound of raw lean beef (chicken or any other meat may be similarly used) and mince it finely. Pour on to it, in a glass or any kind of earthenware vessel, three-quarters of a pint of water, to which have been added four drops of muriatic acid and about half a saltspoonful of salt. Stir well together, and allow it to stand for an hour. Strain through a hair sieve, and rinse with a quarter of a pint of water. It is to be taken cold, or, if warmed, must not be heated beyond 120° Fahr.

It will be observed, Dr. Pavy remarks, that no cooking is here employed, and although much richer in nutritive material and more invigorating than ordinary beef-tea, the raw-meat taste that it possesses sometimes causes it to be objected to.

In Table F, I have given the results of analyses of beef-tea made with the addition of 1 cubic centimetre of hydrochloric acid, but without salt. They cannot, therefore, be taken as fair examples of Liebig's soup, but show a large percentage of albumen. I see no good reason why this should not also be heated to the boiling point before administration, if the patient objects to it in its raw form—but hope to have the opportunity of continuing my investigation of the subject further.

TABLE F.—*Analysis of Beef-tea made with Hydrochloric Acid.*

	I.	II.	III.	Average.
Grammes, meat	455.6	419	421.5	
“ water	460.1	419	421.5	
“ soup	484.7	402.5	416	
Cubic centimetres, soup	475	400	415	
Composition of soup—				
Water	94.92	95.34	95.62	95.29
Solids	5.08	4.66	4.38	4.70
In 100 parts solids—				
Organic	88.62	89.01	88.55	88.72
Salts	11.38	10.99	11.45	11.24
In 100 parts soup—				
Water	94.92	95.34	95.62	95.29
Albumen and colouring matter	4.50	3.03	2.86	4.14 ¹
Other organic matter		1.12	1.02	
Salts	0.58	0.51	0.50	0.53
From 100 parts meat—				
Albumen and colouring matter	4.78	2.91	2.82	4.14
Other organic matter		1.07	1.00	
Salts	0.61	0.49	0.49	0.53

In conclusion, although the calculations of the percentage from 100 meat are marred by the error inseparable from any means which I possessed of expressing the soup, I think it hardly large enough to prevent conclusions of some value from being drawn from them.

If beef-tea be made according to the receipt of Dr. Pavy, it is probable that not more than 1.5 parts of albumen are derived from 100 parts of meat; while by the cold process under D, not less than 3 per cent. are obtained.

If, therefore, the composition of the first is satisfactory, and we may content ourselves with these quantities of albumen, the same result may be attained by the use of half the amount of meat—a very considerable saving; while if, as is more probable, we wish to administer as much food as possible, we obtain in the cold process not only a greater percentage of albumen, but a considerably greater quantity of soup.

I may add that since from the analyses published it would seem, to say the least, rare to find cow's milk containing more than 3.03 per cent. of casein and albumen taken together, or than 0.78 per cent. of salts; the results of my analyses of beef-tea render it fair to infer that the latter, properly made, falls but little behind milk in value as food so far as these ingredients are concerned, though it will require, of course, physiological experiment to decide the question absolutely.

¹ Average albumen for II. and III. 2.94; per 100 meat, 2.86.

ART. VIII.—*Some Remarks on Diseases Peculiar to Mountainous Regions.* By W. H. GARDNER, M.D., Asst. Surgeon and Bvt. Major U. S. Army; Post-Surgeon Fort Union, New Mexico.

IN Professor Aitken's valuable work on the Science and Practice of Medicine he has given us many valuable facts regarding the distribution of disease on the surface of the globe, together with the effects of climatic influences upon the inhabitants, but as yet I have seen no work which treats of the diseases caused by the deficient atmospheric pressure and the rarefied air of mountainous regions, and it is to report some diseased conditions believed to be due to these causes that the present article is written.

If we consider air-breathing animals as complex machines, constructed to conform to certain physical conditions, and requiring a definite amount of oxygen and other elemental substances to carry on the constant changes required for the perfect working of all the varied parts of the machine, we would say without a second thought that no great change in these physical conditions (environment) could be made, or no great proportion of any one essential element abstracted, without seriously impairing, or stopping altogether, the working power of the machine. Yet observation teaches us that the tissues and organs of animal bodies are made of such mobile and transmutable material that interference with action in one part is speedily taken up and compensated for by increased or diminished action in some complementary or connected organ; or the organs themselves affected in a short time become changed in a certain measure to agree with the altered conditions; if the wind is not "tempered to the shorn lamb," the irritation to its skin causes increased flow of blood to the part and consequent hypertrophy, and eventually the shorn lamb becomes tempered to the wind. But this alteration in animal bodies to agree with altered surroundings (acclimatization) is only possible when the necessary changes can be brought about in so gradual a manner that the tissues and organs affected by them can accommodate themselves to these changes without so serious an interference with their functions or nutrition as to cause their inflammation or degeneration. If we take an Esquimaux from the frozen shores of Greenland, and suddenly transport him to the hot, humid forests of Brazil, no one could reasonably expect him to live through the first year, and yet we are frequently witnesses to quite as radical changes being made by the orders of physicians, many of whom, without thinking of the vast difference in altitude, temperature, condition of atmosphere, etc., send their patients with phthisis from the Atlantic and gulf sea-boards, where the barometer stands at 30 inches, and the air is almost always saturated with moisture, to the changeable mountainous regions of Colorado, New Mexico, and Arizona, where the barometer seldom stands higher than 24 inches, and the temperature frequently varies 40° in twelve hours, depend-

ing on whether the wind blows from the dry, parched plains of Texas, or from the snow-crowned summits of the Rocky Mountains ; one of the best commentaries upon which practice is the following paragraph which we cut from a Colorado newspaper a short time since :—

“ Six human bodies, in metallic caskets, were shipped east yesterday on the Kansas Pacific train. To offset this, nine invalids arrived last evening.”

If we take the superficial area of a man of medium size as equal to sixteen square feet, and the atmospheric pressure at fifteen pounds to the square inch, we will have a pressure on the body of 34,560 lbs. ; now the atmospheric pressure is directly dependent upon the constitution of the air and the weight of the gases which compose it, and it can easily be seen that no great change can be made in the weight of these gases without altering the amount of pressure, and so causing serious alterations in the functions of respiration and circulation, both of which depend to a very great extent upon the simple physical conditions of the constitution, and weight of the atmosphere.

But the disturbance arising from the removal or loss of atmospheric pressure, though I believe the chief cause of hæmoptysis, epistaxis, and menorrhagia, yet seems to be less of an evil and one more quickly compensated for than the deficient oxygen in the rarefied air of great altitudes.

Every process of vitality manifested by animal bodies, not even excepting thought and volition, is evinced by the destruction of tissue-elements, the débris of which appear in the circulating fluid, chiefly in the form of carbonic acid, and for the removal of this poisonous compound the blood is subjected, at short intervals, to the action of the atmosphere, when it gives off its carbonic acid and absorbs oxygen in its stead. The air we breathe consists of nitrogen and oxygen in the proportion by volume of 79.1 of the former to 20.9 of the latter, and these proportions have been found to be constant and invariable over all parts of the globe, and at all elevations ; the only essential difference between the air at the sea-level and that from mountainous regions being that the higher we ascend the less dense the air becomes, *i. e.*, the further apart the atoms composing it are held, and the greater volume of it there is required to give the same weight. If now of the dense atmosphere at the sea-level, it is necessary to make eighteen respirations per minute, and take into the lungs twenty cubic inches at each inspiration to furnish sufficient oxygen to the blood, and through it to all the tissues of the body, it can easily be seen that when the air is *less* dense, and contains *less* of each of the gases which compose it, there must be either a greater volume of air taken in at each inspiration, or a greater number of inspirations per minute to furnish an equal amount of oxygen, and if one or the other of these compensations be not made, symptoms of poisoning by carbonic acid soon make their appearance.

The symptoms of poisoning by this gas are described as follows :—

"The earlier symptoms are a sense of weight, uneasiness, or pain, often violent, in the head: ringing in the ears, giddiness, sometimes vomiting, a great disposition to sleep, a rapid loss of strength, so as to be unable to continue upright, a great difficulty of breathing, the senses are dull, and there is a partial or total loss of sensibility. In advanced cases, the breathing is occasionally stertorous, and froth issues from the mouth. Coma is perfectly established, interrupted briefly in some instances by delirium, and in others by slight convulsions."—*Beck's Med. Jurisprudence*, vol. ii. p. 153, 1863.

If now we compare this assemblage of symptoms with those that take place in persons who go quickly from a less altitude to a greater, either by climbing to the tops of high mountains, or by the less fatiguing method of ascending in balloons, we will find them almost identical with the added symptoms occasioned by the loss of atmospheric pressure—there is the same difficulty in breathing, the same feeling of fatigue, numbness or tingling in the extremities, ringing in the ears and intense headache, and from the loss of external pressure frequently hemorrhages from the mucous membranes of the air-passages.

The ascent of the balloon "Zenith" from Paris last spring, which resulted in the death of two of her crew, and the very narrow escape of the third, must be regarded as the "experimentum crucis" which demonstrates beyond a doubt that human beings cannot safely ascend to a height of 8600 metres without resorting to some *reliable* apparatus to supply oxygen for respiration, and also some appliance to counteract the great loss of pressure at that immense height. Opinion seems to be still divided as to the (efficient) cause of death in the cases of MM. Sivel and Croce-Spinelli, according to the Paris correspondent of the *London Medical Times and Gazette*. The Academy of Medicine attribute the deaths to the extreme rarefaction of the air, whilst the Academy of Sciences maintain that it was due to asphyxia; M. Gaston Tissandier, the only surviving one of the crew, coinciding in the opinion held by the Academy of Medicine. The principal facts noted in both the fatal cases were, "bleeding from the mucous membrane of the mouth and lungs, which was accompanied by extreme lassitude, and temporary paralysis of the respiratory muscles, which proved fatal."

There can be but little doubt that deficient oxygen, and deficient atmospheric pressure each had a share in producing the fatal termination.

From these preliminary remarks it will be apparent that the diseases *peculiar* to mountainous regions are either due to—

1st. Deficient atmospheric pressure, or,

2d. Deficient oxygenation of the blood.

Of those due to the first-named cause the chief are epistaxis, hæmoptysis, menorrhagia, and nasal and bronchial catarrh. They occur most frequently in persons who have recently come into the country from a lower altitude, and usually upon those days that the barometer stands the lowest.

Epistaxis is most frequently met with among young and vigorous adults. I have seen many cases of it among recruits coming into the

country from the recruiting rendezvous in the Eastern cities; in some instances it is troublesome from the frequency of its recurrence, but is generally easily controlled by free purgation, low diet, etc.

Hæmoptysis is most common among patients with pulmonary consumption, who have come out to this country in search of health in obedience to the orders of physicians. In the first case I was called to attend it was rapidly fatal, the patient being dead before I reached him; in the next case alarming hemorrhage had set in whilst the patient was crossing the Raton pass on the main stage road between Los Animas, Colorado, and Fort Union, New Mexico, and had continued with but slight intermissions until he arrived at this post. When I first saw him he was pallid and almost bloodless, but the hemorrhage was still going on. I succeeded in checking it after a time with tinct. ferri chlor., and then informed him that his life depended on his getting to a lower altitude as soon as possible. In several other cases that have come under my observation their histories were not materially different from that last given; hemorrhage from the lungs had appeared shortly after reaching the altitude of 6000 feet. It should also be stated that in the *most*, if not *all* of these cases no hæmoptysis had appeared before reaching this altitude. I have a patient now under my charge—a young recruit from New Orleans—in whom hemorrhage from the lungs first appeared a few days after arriving at this post, and has recurred at intervals ever since whenever the barometer descends to the neighbourhood of 23 inches; in this case there is no history of inherited tendency to phthisis in his family, nor any evidence of tubercles in the lungs.

Menorrhagia is most frequently seen in plethoric, full-blooded women between the ages of thirty-five and forty years. I have attended a good many cases, and found it usually to subside readily upon the exhibition of ergot followed by purgations and low diet, though it seems liable to recur at each menstrual period. I am also of the opinion that the “Chilie,” or Mexican red pepper, which is eaten in such quantities in this country, acts as a *vascular* stimulant to the uterus. I am very confident that I have seen it act as an irritant to the male bladder, and have known attacks of dysuria to follow its use.

Nasal and Bronchial Catarrhs are very prevalent at all seasons of the year; they seem to be partly due to deficient atmospheric pressure, and partly to the constant winds that keep the air filled with particles of irritating dust, frequently of a highly alkaline nature. Both diseases are exceedingly unmanageable and exceedingly prone to return upon the least exposure.

The diseases arising from *deficient oxidation of the blood* are—

Paralysis, rheumatism, and perhaps also typhoid fever.

The form of paralysis is unusual, and it may not be uninteresting to describe the symptoms as they appeared in my own case.

Shortly after arriving at this post (Fort Union, N. M.) I was attacked with fulness of the head, ringing in the ears, mental hebetude, confusion of ideas, dizziness, and headache. Thinking these symptoms might be caused by constipation of the bowels, torpidity of the liver, or dyspepsia, I took a mercurial cathartic and followed it up with a dose of Rochelle salt. This relieved the oppression for a day or two, but it soon returned, the dizziness and confusion of ideas increased, and a feeling of numbness and tingling commenced in the fingers of the left hand and gradually extended until it involved the whole left side, even the muscles of the tongue being affected so that I could not articulate; there was also oppression of breathing, throbbing of the carotids, and slight dilatation of the pupils, with a pulse of 80, and tolerably full. The only medicine at hand was a bottle of chloroform, and, thinking the symptoms might be due to spasm of the cerebral or pulmonary vessels, I poured a drachm or two upon my handkerchief and inhaled it, when the disagreeable symptoms promptly subsided. The next day I mentioned my case to Dr. M——, U. S. A., who was here at that time, and, thinking the trouble might be caused by malaria, he advised me to commence quinia and arsenic, which I at once did, taking twelve grains of quinia and one-tenth of a grain of arsenic each day; but in the course of five or six days, while under the full influence of these medicines, I had another attack in all respects similar to the first, coming on after a hearty dinner, which was relieved by an active emetic. Shortly after this second attack I was called to attend a case of midwifery at Mora (a little town in the mountains, fifteen miles to the N. W. of the post, and considerably higher in altitude). The woman was delivered without difficulty, and I had been in bed and asleep for more than an hour when I was awakened by a third attack, which was more prolonged and severe than either of the others. Upon this occasion I inhaled chloroform, I took ipecac, bromid. potass., brandy, and indeed almost all the articles of the materia medica that I had with me, but with little or no good effect; the symptoms, however, gradually subsided and went off completely by morning. It was only after this third attack that I discovered the disease was due to imperfect oxidation of the blood, and commenced a rational treatment.

The next case was that of a lady, aged 35 years, the wife of an army officer passing through the post. A few hours after arriving here she was seized with difficulty of breathing, headache, dizziness, and confusion of ideas; numbness and tingling commenced in the right hand and foot, and gradually increased until there was more or less anæsthesia over the entire right side of the body; the paralysis did not at first affect the nerves of *motion*, for she could move either hand or limb when requested to do so; there was also throbbing of the carotids, flushed face, and widely dilated pupils on both sides, and a pulse of 76 and tolerably full; the tongue was clean and red, but was protruded with hesitation and difficulty, was not

curved to either side. The anæsthesia of the right side gradually passed into *clonic* spasm of the muscles of the leg and arm, and eventually subsided in two or three hours under the use of derivative sinapisms to the wrists and ankles, and an emetic of ipecac followed by ten grain doses of chlorate of potass. every hour in two ounces of water—there was no history of uterine disease, hysteria, or epilepsy in this case, nor was there any return of the disease after leaving this post.

In the third case the symptoms were more or less apoplecticiform ; still it is here cited because I believe the origin of the disease to have been the same.

I was sent for at 2 o'clock A. M., to attend at the hotel here a man of about forty years of age, and of rather robust and healthful appearance ; he was lying on the left side in a deep stupor and breathing stertorously ; the pulse was 84 and rather full ; the pupils of both eyes were closely contracted, and a bloody mucus was issuing from his mouth. He seemed insensible to irritants, such as pricking or pinching, and only moved the toes slightly when the sole of the foot was tickled. The history of the case threw but little light upon the subject. He was known *not* to be an epileptic, he was a temperate and even abstemious man, and was known to have gone to bed perfectly sober ; there was no smell of liquor, laudanum, chloroform, or any other narcotic on his person or about the room ; the only facts that seemed to have any bearing on the case were that he had arrived at Fort Union only two days before from Cincinnati—and that he had eaten a hearty supper before going to bed. He recovered perfectly in a day or two under the use of derivative sinapisms, free purgation by croton oil, and full doses of potass. chloratis largely diluted with water.

The cases above cited are only specimens of the many that have come under my notice since I have been in this country. Sometimes the disease is of very mild form, and is limited to a partial anæsthesia of one or other extremity, and I have seen *two* cases in which it went no further than the hand and forearm of one side ; in others again it is at once fatal, as in the case of General G——, U. S. Army, who died of this disease in Santa-Fe, New Mexico, in January of the present year ; in still other cases, after the alarming symptoms have somewhat subsided, some portion of the cerebro-spinal system is found to be permanently impaired. A short time since a patient, who had been sent to this country on account of his health, came to consult me about “a kind of paralysis that had come on since he came here,” which proved to be *progressive locomotor ataxia*, and I have now under treatment a case of aphasia, the result of a stroke of paralysis which occurred here last June.

Rheumatism is exceedingly common, not only among persons who have recently come into the country, but also among the indigenes. It is most frequently seen of the subacute type, though the acute articular form is by no means rare ; so far but one case has come under my personal observa-

tion in which there was any cardiac complication. In this instance there was a well-marked endo-cardial murmur with the first sound of the heart, and subsequent symptoms of embolism of the profunda femoris of the right side.

Typhoid fever is the great scourge of the Mexican towns; it occurs among the youth and young adults of both sexes, and is usually complicated with pneumonia. A form of this fever not materially different from the well-recognized type, is frequently met with among mountaineers and miners, called mountain fever; in the only case in which I had an opportunity of making an autopsy, I found the usual lesions of typhoid.

In all of these diseases one essential element in their causation is deficient oxidation of the blood, and to supply this deficiency the treatment should be in a great measure directed. In the paralysis we should bleed without hesitation if the pulse indicates that it is necessary to reduce the vascular tension in order to prevent the giving way of a vessel and injury to the brain or spinal cord, but I believe this will seldom be found necessary. Theoretically the most speedy and efficacious remedy would be the inhalation of oxygen gas. In a communication of M. Paul Bert to the French Academy two years ago, detailing some experiments made upon himself in regard to the effects of changes of barometric pressure, he states that "with a mixture of 45 per cent. of oxygen he could bear without injury, a pressure of only 338 millimetres, which corresponds to the height of Chimborazo, and with 63 per cent. he was able to stand 250 millimetres (less than ten inches)."

Again, in poisoning by chloroform, no remedy has been found more quickly efficacious than inhalations of oxygen; but as the diseases here treated of usually occur in those mountainous and inaccessible localities where oxygen *per se* can rarely be obtained, we have to furnish it to the blood through the stomach, and I believe the best medicine for this purpose in the majority of cases is the chlorate of potass.; I am confident that I have seen this salt exert a marked benefit over the paralysis in less than six hours. When, however, the blood is plentiful but of poor quality, and lacking in red corpuscles, we must resort to mineral acids, and particularly the nitro-hydrochloric, and also to the tinct. ferri chlor. In the rheumatism and typhoid fever found here, the nitro-hydrochloric will be found of great benefit. If these diseases are caused by an imperfect or interrupted retrograde metamorphosis of effete tissue from want of oxygen to carry on the necessary changes, by supplying the oxygen in an available form we only add the one link needed to complete the physiological chain, but whatever may be the *modus operandi* the *fact* of its beneficial action is undeniable.

I am well aware that the foregoing remarks will be received by many persons with surprise, for the mountainous region of Colorado, New Mexico, and Arizona has long been considered one of the most healthy

regions on the continent, and especially a region where phthisis and other lung diseases were unknown, and while I grant that phthisis is rare among the indigenes, yet in my practice of only two years in New Mexico I have seen several undoubted cases, and I believe that any physician who has practised medicine in this region will agree with me in stating that pneumonia, bronchitis, and throat diseases, and also rheumatism and typhoid fever, are not only exceedingly prevalent even among the native inhabitants, but are also attended with a very high death-rate. How much of this sickness and mortality is due to climatic influence and how much to their manner of life is yet an open question and one not so easy to answer, and while I believe that imperfect oxidation of the blood acts as a constant and unavoidable source of disease, yet it must be recollected that all the dwellings in this country are made of sun-dried bricks (adobes), and all are more or less damp, and as to real healthful cleanliness, either of their persons or surroundings, it would seem that such an idea had never entered the minds of the inhabitants.

These remarks are necessarily crude and imperfect, partly from the limited field allowed for observation and partly from absence of any statistics, but I think a sufficient number of cases has been quoted to make it fully apparent that physicians have exercised too little care in sending patients to a country they know nothing about, and that thereby they have brought discredit upon themselves and the profession at large, and have caused the loss of many valuable lives.

FORT UNION, N. M., March 7, 1876.

ART. IX.—*On Spasm of the Heart, as a Cause of sudden Death, and its Relation to Angina Pectoris.* By FREDERICK D. LENTE, M.D.

C. B., aged 35 years, station agent of the H. R. R. Rd. Co., at Cold Spring, was taken sick about the eighth of April, 1875, and sent for me on the 10th. I diagnosed mild typhoid fever. He was never sufficiently ill to keep his bed all day, and had some relish for food all the time. Temp. 102° to 103° ; pulse but slightly accelerated; bowels natural. He had a slight hacking cough almost from the first. After the lapse of a fortnight, his fever subsided, but he was quite feeble, and found that he had lost eighteen pounds in weight. He went out before it was prudent to do so, visited a sick brother in the city, returned the same day, and for two days endeavoured to attend to business. He had a relapse; the fever assuming the same mild course. Temp. 102° – 103° . The cough was more annoying, and a mild anodyne expectorant mixture was prescribed. This was all the medication, except one mild cathartic and a simple tonic at the time of his relapse, when his appetite totally failed. This restored it to some extent, and he acquired some relish for his food.

May 3d, his wife informed me that he had a sudden attack in the afternoon. He had taken a little milk-punch, while sitting up in his chair,

in the sitting-room, and immediately complained of faintness and dyspnœa, and desired the windows to be thrown open ; which was done. When I made my next visit, and the attack was mentioned, finding him doing as well as usual, I attributed it to nervousness and excitement, as his child lay very ill with meningitis in the next room, and his mind was harassed by other cares and annoyances. In consequence of the continued cough, and his wife's uneasiness about it, I made two thorough examinations of his chest, and found nothing abnormal. Dr. Murdock did the same, our last examination being on the 4th, the day preceding his death.

On the 5th, at 7 o'clock A. M., was called to him and found him dead. I suggested a coroner's inquest and an autopsy ; and the suggestion meeting with approval, the examination was made at 3 o'clock P. M. by B. D. Taylor, M.D., U. S. Army, assisted by Dr. Murdock, and superintended by myself.

Surface pale, rigor mortis perfect ; extremities cold to near the trunk ; abdomen warm. Temp. in axilla 88°.

Abdomen. On slitting up the *ileum* Peyer's plates were seen to be moderately enlarged, and one or two small ulcerations partly healed. The *liver* natural, except a slight congestion ; *kidneys* the same, the left being decidedly enlarged. Stomach healthy ; *spleen* small.

Thorax. *Lungs* perfectly normal. But little fluid in the pericardium. *Heart* small, and *very pale*. Considerable fatty deposit. Cavities entirely empty, no clot, no fluid, no stain ; valves and muscular structure healthy.

Head. Nothing worthy of note. *Spine* not examined.

Now, what did the autopsy warrant us in saying to the Coroner, when asked by him " what is the cause of death ? " Taken by itself, no very obvious cause. We all remarked the peculiar shrunken and anæmic appearance of the heart, and spasm was at once suggested as a probable cause of death. While the autopsy was being continued, I proceeded to inquire more fully, of the wife, into the nature of the attack thirty-six hours before death, and which I had heretofore considered as of little importance. She stated that *he was very faint, his countenance anxious and deathly pale, his lips blue, his hands pale and shrunken*. The evidence of spasm of the heart was now sufficiently clear to warrant an opinion as to the cause of death, and the verdict of the Coroner was in accordance with this.

At about this stage, the father of the deceased arrived, and stated that at the age of 22 years, his brother was suffering from typhoid fever at Hudson, N. Y., and at the end of four weeks was pronounced convalescent, though very weak. While the doctor was announcing this opinion in an adjoining room, they heard a peculiar sound, and on re-entering the sick-chamber, found the patient dead. He further stated that, at the age of 42 years, his mother died suddenly, when apparently in good health, and while conversing with him.

Dr. Ainsworth of the Army, late of the resident staff of Bellevue Hospital, now stationed at the Military Academy, relates, from memory, the following particulars of a similar case, which occurred in his division.

The woman was found dead in her bed, at the morning round in what was then Ward 24. The nurse could give no history of the case other than that she had been brought into the ward during the previous night, com-

plaining of pain in the abdomen, and nausea. Her symptoms did not seem to be sufficiently severe to justify the calling of the doctor at that hour, and she was not therefore seen by any physician.

I made the autopsy three hours after the discovery of her death. The encephalon was normal. The abdominal and pelvic viscera, though very carefully examined, showed no signs of disease except a slight congestion of one kidney. The great vessels, both of chest and abdomen, presented no signs of disease. The lungs perfectly healthy. The condition of the heart was specially striking, and afforded the only clue to the cause of death. The tissue of the heart and of its enveloping membrane was perfectly sound, but the heart itself was *firmly contracted*, and its cavities all completely emptied of blood; nor were there any of the usual clots. In fact, if the heart had been opened and cleaned of its contained blood, it could not have been freer of that fluid than it was at the autopsy.

The literature of "spasm of the heart" is exceedingly meagre; in fact, at the present day, it seems hardly to be recognized as a pathological entity. Dr. A. Flint, in answer to a letter of inquiry on the subject, says: "I cannot furnish you, from my own experience, any case of sudden death fairly attributable to spasm of the heart. I suppose that, in cases of sudden death due to suspension of the heart's action, the condition is generally paralysis from distension, or arrest of action through the *par vagum*. Aside from the experiments relating to the action on the heart of digitalis in poisonous doses, I cannot, at this moment, refer to literature bearing on the subject." Dr. Alonzo Clark says, in answer to a like inquiry, "I cannot aid you much in your inquiry regarding spasm of the heart. In post-mortem examinations, it is not uncommon to find the heart contracted and empty. But I have not been led to regard this as anything more than a natural contraction, the last act of life. In certain cases of tetanus, during a spasm, I have listened for the heart's sounds, and, for a few seconds, have found it silent and pulseless (perhaps in spasm). I have, once or twice, noticed the same thing after poisonous doses of strychnia. I do not know that anybody has written upon the subject."

Until after the occurrence of the case which led me to investigate the subject, I had also forgotten that Heberden and Latham discuss spasm of the heart in its relation to angina pectoris; and lately,¹ Dr. Osgood has extensively referred to the opinions of various authors on the pathology of angina, and incidentally to the conflicting opinions as to spasm, in common with other alleged causes of this singular disease. Latham says "there is a form of dyspnœa, which, from its suddenness, its severity, and the pain of approaching death which attends it, is apt to be confounded with angina pectoris. From what I read in books, and from what I hear in my intercourse with medical men, I suspect that they both pass popularly for the same thing. But it is most needful that our ideas of each

¹ Am. Journ. Med. Sci., Oct. 1875.

should be kept separate." The two, he says, are naturally distinct, though one may be complicated with the other. It will be observed that my patient complained of a recurring dyspnœa of a severe but transient character. (He had complained, as I afterwards discovered, to a friend, of attacks of difficult breathing and distress, for two or three weeks); and the severe attack, preceding his fatal one by thirty-six hours, was characterized by urgent dyspnœa. His anxiety about his sick child, and other matters, which were weighing heavily upon him, prevented him probably from complaining to me of a symptom which did not chance to occur during my visits. The obscurity involving the pathology of these cases, whether we call them *angina* or by whatever term, and the startling fact that a man, apparently in perfect health, and, indeed, known to be free from organic disease, may, in a few days, or in a few minutes even, die from it, naturally makes us eager to seize upon any fact which may lead us to an explanation of the immediate cause of death in some at least of the cases. I, therefore, feel justified in quoting a few of what Latham calls "the sad and interesting particulars" of a case under the care of Dr. Bucknill. "Up to within a very few hours before his (the patient's) death, both body and mind seemed equally to give proof and promise of health. He still took his accustomed pleasure and refreshment in strenuous exercise. His thoughts were still busily employed upon the highest subjects, conceiving and composing with perfect ease, rapidity, and power. He retired to rest at midnight, June 11, 1842, feeling and believing himself to be in perfect health." Yet within three hours after, he was dead. Dr. Bucknill states that, when he entered the room, the patient was almost free from the terrible pain from which he had suffered, was perfectly calm and collected. He conversed freely, and yet his pulse could scarcely be felt. Under stimulants externally and internally, the cold extremities became warm, and the pulse "natural." "He asked me again," says Dr. Bucknill, "what the pain was." "I told him I believed it to be spasm of the heart." He said, in answer to a question, "Yes, my father died of disease of the heart." He then asked many pertinent questions with regard to the causes and consequences of disease of the heart. The pain would then seize him with great intensity, and then suddenly disappear. In one of these paroxysms he died; the pulse ceasing before respiration. The autopsy, as usual, revealed nothing which could explain the sudden accession of the symptoms, and the sudden death. The heart was rather large, the muscular structure was extremely attenuated. It is a noticeable fact that the heart was very *flaccid* and *flat*. It contained but little blood, and that fluid. There were no coagula of any kind in it. Now, let us ask, what more likely to produce such symptoms than *spasm*? What other condition would be competent to produce them? But the condition of the heart (post-mortem) was not such as we *usually* find in spasm. Can the heart, after death from its spasm, relax? No

one can answer positively. In this case, the autopsy was made forty-eight hours after death, in very hot weather, and decomposition was well advanced. It is very probable that such a heart would, under these circumstances, relax.

But death may probably occur from spasm of the heart, and yet the cavities contain a considerable amount of blood; that is, there may be *degrees* of spasm of this organ as of other muscles; the highest degree producing death, as we have seen, instantaneously, when the heart will be found empty and contracted, if examined soon after death. A less degree will produce such a spasm as will arrest action more or less completely, and the patient may recover or die. If he dies, the cavities will be found containing more or less blood. And the symptoms will be those of anæmia of the brain. This "retardation and accumulation of blood in the cavities of the heart" Parry refers to *syncope*, and the latter to *diminished energy* of the heart, caused by organic disease. He therefore calls the disease "syncope anginosa." This would be a sort of cardiac paralysis. But, in many cases, there is no organic disease; this point is now well settled; neither has the condition of the patient been such as to lead one to suspect paralysis. They are frequently in good health. Besides, paralysis almost always occurs, even when the patient is greatly debilitated, only on his making some exertion, slight though it may be, generally on attempting to assume the erect or sitting posture, as in diphtheria and pneumonia, etc. And, in these cases, no pain is complained of, nor would we expect actual pain from paralysis. The death is generally too sudden for any intelligible expression; but if any, it is a feeling of intense exhaustion. Flint¹ seems to deny the existence of *degrees* of spasm, as he thinks that "a spasmodic condition of the heart sufficient to occasion such prolonged as well as intense pain would be incompatible with life." But the pain is not so very prolonged, but recurrent, as in the case just narrated, in which also the almost static condition of the heart was indicated by the pulse ("could scarcely be felt"). Latham² asks "what, then, is its real nature?" "Dr. Heberden," he says, "reports, after vast clinical experience of the disease, 'that it seems to pertain to *distension*,' and that he evidently meant by '*distension*' what we understand by *spasm*.'" I believe it is Prof. Wm. H. Thomson's idea that some poisons, like aconite, veratria, etc., and also shock, kill by spasm of the heart; the heart not closing its cavities completely, but partially, so as not to allow of sufficient dilatation, and thus inducing anæmia. The remedy he considers to be opium. Dr. Alonzo Clark reported a case of aconite poisoning, in which, all other remedies failing, he injected morphia subcutaneously, and saved the patient.

The writer had a case more sudden, in some respects, than Dr. Buck-

¹ Diseases of the Heart.

² Diseases of the Heart.

nill's, in the person of a lawyer, forty years of age, and in fair health, though he had had one or two moderate attacks before the fatal one. He had suffered from rheumatism, but no disease of the valves existed. Yet he died in great agony before I could reach him, though not far away, and summoned at once. No structural disease was discovered at the autopsy. It was many years ago, and I cannot remember the condition of the cavities as to containing blood, or whether contracted or distended.

It may be objected, that had my patient, C. B., died of a painful disease like spasm of the heart, he would have given some evidence of a struggle, or made some noise sufficient to rouse those near him. No one was very near him; but spasm may kill instantly and quietly, as in the following case from Latham:—¹

R. P., about 55 years, was in the enjoyment of his wonted health, when, one day, after his morning's shooting, without any extraordinary fatigue or exertion, he felt, at dinner, an unusual pain in the region of the heart. He retired into his library, and the pain soon ceased. He then begged to be left alone until tea-time. In less than an hour his wife returned into the room, and found him lying upon the sofa just in the position she had left him. She believed him asleep, but found him dead. "The autopsy revealed nothing that could account for his death but a thin, fat heart." Here pain was the sole symptom, and it is presumable, as Dr. Latham says, that it proceeded from spasm of the heart, for we know of no other cause. Neuralgia, of itself, would not cause death.

Although writers are not disposed to admit spasm of the heart as a cause of death, they frequently afford evidence unintentionally of the fact, and also incidentally admit its possibility. In his late treatise on "Electricity in Nervous Diseases," Dr. F. Fieber, of Vienna, in speaking of the efficacy of galvanism in different spasmodic affections, enumerates "spasms of the heart" (proceeding from the cardiac plexus) as one of these. Dr. Stokes (*Diseases of the Heart*) says: "Little as is known of spasm of the heart, that little is opposed to the idea of angina pectoris being caused by it." But in a note to the chapter on "Rupture of the Heart," he remarks: "The same observer (Prof. Smith) has found the heart in tetanus not only so firmly contracted as to cause obliteration of the cavity of the left ventricle, but twisted on itself so as to present a spiral condition, from the extreme contraction of the oblique muscular fibres." A precisely similar condition has been found in the hearts of reptiles poisoned by digitalis. (H. C. Wood, Jr.)

There can be no question as to the cause of death in such cases as the above. In some important and interesting experiments conducted by Drs. Taylor and Lauder Brunton, about eighteen months ago, on the effects of the venom of different serpents, they found, says Weir Mitchell, that "in rare cases the death was by spasm of the heart, but that it was usually due to paralysis of centres."

¹ Lectures on Subjects connected with Clinical Medicine, by P. M. Latham.

It is a significant fact that, in four out of five cases of *angina pectoris*, reported by Dr. Osgood, of Philadelphia, in the number of this Journal for October, 1875, it is noted that the *left* radial pulse was much smaller than the right, sometimes altogether obliterated. In the remaining cases he does not state whether it was so or not. In none of the cases was there any organic disease discoverable except a fatty degeneration in one. In these cases the painful sensations were all on the *left* side. "This condition of things" (the different size of the arteries) "led me to suspect," says Dr. Osgood, "vaso-motor spasm in the left arm." Nothnagel recognizes spasm of the heart as the cause of *angina pectoris*, but thinks it secondary to arterial spasm. Dr. Osgood's cases would seem to strengthen the probability of this view.

The effect of nitrite of amyl, far beyond that of any other remedy, in relieving the paroxysms of *angina*, seems to point to *spasm* as its usual cause. It has been very generally successful, and I am in the habit of advising my patients to keep it by them all the time; and the little glass globules or capsules in which it is now put up in doses, are very convenient. Dr. Osgood found it the only reliable and prompt remedy in his cases. The paroxysms of epilepsy are due to a spasm of the cerebral arteries, and are arrested at once, if sufficient warning is given, by this drug; so in spasmodic asthma.

In all the cases of *angina* recorded by Dr. Latham, and in many of those recorded by others, the heart was soft and flabby, and the coronary arteries generally much diseased. It might be supposed that such hearts would be subject to paralysis rather than to spasm. But, under what circumstances do spasms of other muscles come on? In cholera, the muscles are feeble, and drained of blood. In death from hemorrhage, as in animals bled to death, convulsions usually precede it. "The anemic condition," says Dr. Geo. B. Wood, "strongly predisposes to convulsions." Wolff attributes *angina pectoris* to "imperfect innervation of the heart." A muscle, then, in a healthy and vigorous condition, is not liable to spasm.

The literature of spasm of the heart being so meagre, I may be pardoned for introducing here a *resumé* of Latham's arguments in favour of its existence as a pathological entity, and its intimate connection with *angina pectoris*. "Spasm is always accompanied with pain; and pain and spasm, wherever they are, disable the parts which they befall. Colic stops the peristaltic movements of the bowels. Cramp forbids the hands to handle, and the feet to walk. But the heart is a muscle, and its functions flow from its attributes as a muscle. Now, we are in search of something in the heart, which, as the concomitant of pain, may be disabling to its natural functions. This we find in spasm. In its spasm of smaller degree the heart fails to close freely on the blood, and to impel it freely into the arteries. In its spasm of greater degree it fails

to impel it altogether." "Herein we discover an adequate explanation of the chief phenomena of angina pectoris. It is a *spasm of the heart*."

Heberden sums up as follows: "1. It comes on suddenly, and goes suddenly. 2. It has long and complete intermissions. 3. Wine and spirituous drinks, and opium, afford great relief. 4. It is increased by mental agitation. 5. It exists for years without other injury to the health. 6. At first it is not excited by exercise in a carriage or on horseback, as is usually the case with scirrhus or inflammation (organic disease). 7. The pulse is not quickened in the very paroxysm. 8. The paroxysm attacks soon after their first sleep; a frequent event in diseases which proceed from spasm."

Before concluding I will adduce one more instance of death apparently from spasm of the heart, as it indicates that fatal results of anæsthetics may be due to this cause. The case is reported in the May, 1875, number of the *British Medical Journal*, and was under the care of Dr. James Hardee, of Manchester. A delicate boy of sixteen years, in the Manchester Workhouse Infirmary, had had two operations under chloroform, and came near dying in the second. A third simple operation became necessary. Took brandy one ounce, and then four drachms of ether "on a piece of lint placed on a folded towel, and held pretty closely to the face. He inhaled the vapour more quickly than usual. In about four minutes he seemed to be ready for the operation. Immediately after, and before the operation was begun, Dr. Hardee noticed the respiration, which he had been closely watching, suddenly cease; at the same moment an extreme pallor came over the face, and the pupils became suddenly dilated. Mr. Poultney, the house-surgeon, on placing his finger on the radial artery found the pulse imperceptible. All efforts at resuscitation failed. The autopsy showed all the organs healthy. The *cavities* of the heart *quite empty*."

Although, like angina pectoris, spasm of the heart may occur when the heart is, to all appearance, sound, it may also, like that disease, happen to a heart which is already crippled by organic disease; and partly, perhaps, mainly in consequence of this. Therefore, whether we admit that some of the deaths in angina result from spasm or not, when we know that a heart is the seat of structural change, whether it be muscular, valvular, or arterial, it behooves us to bear in mind, in giving a prognosis, the possibility of sudden death; for as it was formerly quite common for physicians to predict sudden and early death in almost all *organic* cardiac affections, it is now equally common for them to exclude sudden death altogether in their prognosis of these cases.

Dr. Balfour, in his recently published *Clinical Lectures on the Heart*, discusses briefly the relation of spasm of the heart to angina, and does not agree with Latham and Heberden, but inclines to the opinion of Parry, Stokes, and Walshe, that the peculiar symptoms, and death when

it occurs, are due to inhibitory paralysis. He refers mainly to cases in which there have been repeated attacks, and the heart, after death, is found flabby and dilated. But he does not allude to such a case as that of C. B., where the heart is in a quite different condition.

SARATOGA SPRINGS, June to Sept., PALATKA, FLA., Nov. to May.

ART. X.—*An Automatic Method of Opening the Eustachian Tube and Airing the Tympanum.* By H. S. SCHELL, M.D., Ophthalmic and Aural Surgeon to St. Mary's Hospital, Philadelphia.

FOR more than a year I have been in the habit of using a method of inflating the tympanum which seems to me to possess some advantages. This method is based upon the fact that during the act of yawning, and especially if the mouth be kept closed, as in a suppressed yawn, a sensation of movement or slight clicking sound will be experienced in the ears.

I generally direct the patient to keep the lips tightly closed, and to draw down the throat and even to separate the jaws slightly, as if trying to yawn without being observed. The effort usually produces the yawn itself, and if, immediately after the long inspiration which accompanies the act, or at the beginning of expiration, the nostrils are closed with the fingers, air will be felt to fill the tympanic cavities.

The tympanum will remain inflated for some time, often uncomfortably if any amount of force has been used, but may be quickly eased by swallowing the saliva once or twice with the mouth shut. The obvious effect of the inflation can be limited to either ear by closing the external meatus of the other tightly with the unoccupied hand.

The *modus operandi* of the process is as follows: In the act of yawning, as observed in a mirror, the base of the tongue is depressed or fixed, the soft palate is elevated or fixed, and the isthmus of the fauces is very much narrowed by the posterior pillars being strongly drawn towards the middle line. From the shape of a broad arch the isthmus faucium shrinks into a slit half an inch wide and the posterior pillars become straight and rigid.

While this narrowing is in progress a clicking sound is heard in the tympanum, evidently owing to the separation of the walls of the tube, and then inflation may be easily performed. It seems from this that the principal, if not the only agent in producing the effect is the palato-pharyngeus muscle through that portion of it which arises from the cartilage of the Eustachian tube, the so-called salpingo-pharyngeus. The salpingo-pharyngeus does not necessarily contract simultaneously with the main portion of the palato-pharyngeus, for I find that in my own person I can voluntarily

narrow the isthmus faucium to about half an inch in width without affecting the Eustachian tube, unless I make the effort to yawn. In the former case the muscle expends its force upon the thyroid cartilage and pharynx, and the base of the tongue rises. In the latter, the base of the tongue being fixed, the muscle acts in the opposite direction, the salpingo-pharyngeus has a *point d'appui*, and the tube is pulled open.

But the influence of the palato-pharyngeus upon the soft palate is at the same time opposed by the *lavator palati*, it may be also to some extent by the *tensor palati*, for the palate is raised or fixed, and as the two latter muscles have some attachment to the cartilage of the tube, it is possible that they also contribute something to the particular result in question. At all events, in the effort to yawn all the muscles of the throat apparently participate, but the peculiar sound which accompanies the opening of the tube occurs when the action of the palato-pharyngeus is most evident.

As the patency of the Eustachian tube produced in this way is not merely momentary, but continues during the yawn, there is no need of hurry, and inflation can be made very deliberately and softly or strongly as occasion may require. It is only necessary that it should be done while the yawn lasts, and not after it is over.

In many cases it is not necessary to inflate at all, the mere opening of the mouth of the tube being sufficient to let the air rush into the tympanum.

It may be that the patient will not be able to accomplish the inflation of the tympanum by this method upon the first trial, but will almost certainly be able to do so after a few efforts, and, having once succeeded, the repetition becomes easy. After practising the method for a short time, it will be found that it is not necessary to make the complete yawn, but that sufficient control is obtained over the muscles about the isthmus of the fauces to open the mouth of the tube at will.

The various applications of this method will naturally suggest themselves to the aural surgeon. I have found it, however, especially useful in those inflammatory conditions of the middle ear which are accompanied by constantly accumulating mucous or purulent secretion. If there is at the same time perforation of the *membrana tympani*, the discharge of the secretion into the external meatus may be secured at frequent intervals, and the entire aural tract may be kept clean by the application of medicated washes. To apply these it is only necessary to draw a portion of the liquid up the nose until it is felt to run into the pharynx, to hold the head inclined so that the diseased ear is underneath, and to practise inflation as before.

In cases of deafness resulting from closure of the tube from recent swelling about its pharyngeal extremity, this method offers an easy means of obtaining patency of the canal from time to time without pain or annoyance.

A comparison of this plan of airing the tympanum with some of those in general use will show that it may be preferable in some cases.

In the application of the Valsalvian experiment there is always considerable difficulty in forcing air into the tympanum, and the experiment often fails altogether. In any case it requires great straining, the vessels of the head and face become turgid with blood, and the membrana tympani appears more congested than when inflation is performed by other means. The experiment, however, can be made by the patient himself, an important point in many cases of tympanic disease where the application of remedial measures is frequently needed in the absence of the surgeon.

In Politzer's method, beside the objection to drinking from a tumbler common to many persons at a clinic, there is always the nozzle of the air bag to be inserted into the nose, a very unpleasant proceeding to most individuals. In addition the time occupied by swallowing is so short that it is often difficult to hit the exact moment for the air douche, which is also generally given with more force than is beneficial.

In the modification of Politzer's plan, recently proposed by Gruber, the obnoxious air bag is retained, and the Eustachian tube is not always opened in a perfectly satisfactory manner.

The Eustachian catheter, while the most certain of all means, of course irritates the throat and pharyngeal opening of the tube, more or less. It is not requisite, however, to mention the dangers arising from its unskillful manipulation, because, like any other instrument, it should not be used on the living subject, except by the educated hand.

If the membrana tympani be examined during the performance of inflation by any of these methods, a little arborescent twig of vessels is seen to run down the handle of the malleus, and more or less congestion appears to be inseparable from the act; but if the pharyngeal extremity of the tube is simply opened in the manner previously described, and atmospheric equilibrium is allowed to establish itself on the two sides of the membrana tympani, there seems to be absolutely no injurious reaction upon the local circulation.

1004 VINE ST., May 20, 1876.

ART. XI.—*Hereditary Multiple Exostosis; Four Cases, with Remarks.*

By V. P. GIBNEY, A.M., M.D., of the Hospital for the Ruptured and Crippled, New York. (With two wood-cuts.)

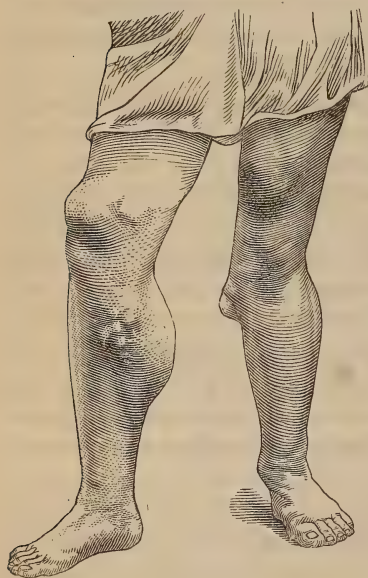
AMONG the many cases of interest presenting from day to day at the out-door department of the Hospital for the Ruptured and Crippled, the following, from an hereditary point of view, seem peculiarly interesting,

and consequently I have endeavoured to make the description, to a certain extent, minute. Case II. was the first observed, and was brought to the hospital by a neighbour, who feared that the child's prospects for becoming a hunchback were very good, and therefore deemed a spinal brace the one thing indicated.

CASE I.—Albert R——, æt. 34 years, a Prussian musician, came under observation March 13th, 1876. He has the appearance of being a hearty vigorous man; has always enjoyed good health, and has long since ceased to feel any alarm about the tumours which now so disfigure his extremities. The peculiar hardness, the relation sustained to the long bones, and the history, remove all question of doubt as to the diagnosis.

I succeeded in finding no less than seventeen exosteal growths, located as follows: symmetrical tumours on the crests of the spines of the scapulæ; a spike-shaped process $2\frac{1}{2}$ inches in length, with a tripod base, on

Fig. 1.



Case I.

the inner aspect of the right humerus, upper fourth; a ridge-like prominence near the distal extremity of the first phalanx of the middle finger of right hand, dorsal and radial surface; small node near proximal extremity of same phalanx; large sessile tumour seated on anterior surface of right femur, lower third, measuring around base $10\frac{1}{2}$ inches, over surface, vertically, $4\frac{1}{2}$, transversely 5; closely attached to the last named, at its inner surface, a bilobate growth $2\frac{1}{2}$ inches vertically by 2 inches transversely; a well-defined bony ridge on the outer side of femur an inch or so above external condyle; an oval-shaped tumour, likewise sessile, near the outer surface of the left femur, at the junction of the middle with the lower third, measuring around base 12 inches, vertically 5, transversely $5\frac{1}{2}$; a ridge above the external condyle, symmetrical with the one on opposite limb; a large ovoid mass, growing apparently from the posterior

surface of the right tibia, giving to the calf a circumference of $18\frac{1}{2}$ inches against a circumference of 15 inches at the same point fellow limb, while the size just below the knee is 14 inches, above malleoli 9; two abnormal tuberosities about the size of a half walnut from the upper fifth of the fibula; from the upper fourth of the tibia again, anteriorly, three or four about the same size as those on fibula; a potato-shaped tumour firmly attached to the head of the left tibia, giving a base measurement of 8 inches, vertical 4, and transverse 3.

It will be seen that the only attempt Nature made at a symmetrical disposition of the exostoses was on the scapulæ and the femora, that she furthermore was careful to locate the same where they were likely to produce the least injury; the only two causing any marked interference with

the joints being the growth near distal extremity of the phalanx, subluxating the finger outward, and the one near left knee-joint producing genu-valgum. The right calf has the appearance of exuberant development, and the superficial veins are decidedly varicose. On the outer side of right leg, near the apices of the tumours, are two or three superficial cicatrices, the result of ulceration, the patient informs me, four years ago. Two similar cicatrices are situate on the inner aspect of left leg. The left upper extremity, as well as the ribs, is free from any deformity.

The urine gave a specific gravity of 1028, and a microscopical examination failed to detect anything abnormal. The patient, in reply to questions concerning the early development of the growths, states that his parents first observed "small lumps" on his lower extremities when he was four years of age; that they grew slowly until he arrived at the age of puberty, and then ceased to grow. The process on the humerus he thinks, however, was larger when he was ten years of age than it is now, and from his tenth year till puberty decreased in size to its present magnitude. He claims to have been subjected to no treatment. His father, he reports, was similarly affected, and a brother, *æt.* 40, now living in Germany, has "hard tumours on his legs." His wife has none, though three children are the subjects of the next three cases reported.

CASE II.—Lizzie R., *æt.* 11 years, well developed, and enjoying a fair degree of health, presented March 8, 1876, for examination. Eighteen distinct exostoses were discovered. Comparatively large-sized tumours, two and a half inches transversely by one and a half vertically, seated on the crests of the spines of the scapulæ, presented well-marked deformity. Immediately in front of the bicipital ridge of each humerus can be felt a distinct tumour about the size of a peanut. On the palmar aspect of the right ulna lower third, on the radial side of the first phalanx of the index finger, and on the same side of the second phalanx of the middle finger, nodes were observed. On the left side, above the epiphysis of radius, a node stood out quite prominently, while the dorsal surface of the first phalanx of all the fingers near the proximal extremity, and the third metacarpal bone distal extremity presented small nodes. The tenth rib on left side, near its middle, was the seat of a node. A small tumour above the internal condyle of the left femur, and another on the upper third of the tibia, completed the list.

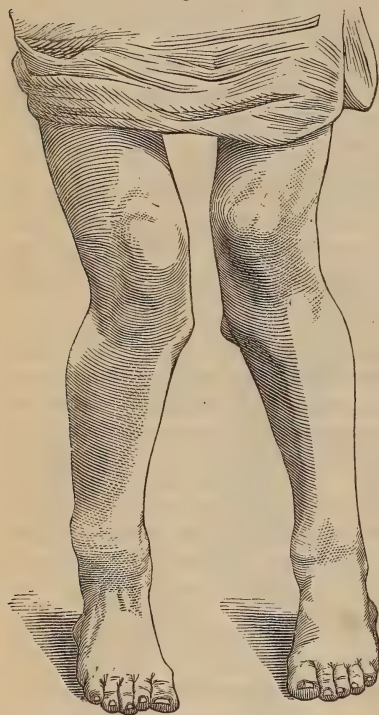
The law of symmetry was not observed in this instance, except on the scapulæ. I could get no history of rheumatism or injury. The father's attention was first directed to these growths after she had turned her third year, and the nodes on scapulæ and rib were the first to appear. No inconvenience is experienced except a frequent headache, which I am unwilling to believe has any special connection with the dyscrasia. The parents are under the impression that the tumours are increasing in size.

CASE III.—Charles R., *æt.* 9 years, seen March 15, 1876. The boy is hardy and well developed, his head being unusually large. The tongue is thick, and apparently hypertrophied, giving a decided lisp to his speech. In this case I made out twenty-eight, varying in size from a pea to a walnut, located in the following order: near the acromial extremity of each clavicle, about the centres of the sixth and eighth ribs on each side, along the spine of each scapula, near the epiphyses of both radii and both ulnæ, symmetrical nodes are to be found. The forearms, likewise, present a marked outward curve. Unmatched tumours are located near the insertion of the deltoid right side, on the dorsal surface of the first

phalanx of the ring finger, near the proximal end, and on the palmar surface of the first phalanx of the ring finger.

There are several unmatched tumours on the lower extremities, and two or three approaching to symmetry. They are so well defined, however, that I thought a better idea could be given by representing them in the accompanying wood-cut. On the right side an oval tumour, seemingly

Fig. 2.



Case III.

symmetrical with the one on the left, can be seen above the internal condyle of the femur. This, however, is continuous with the condyle, and smaller than the other, which is two inches above the condyle, is elongated and ridge-like. The muscular development makes both more perceptible to the touch than to the sight. On the upper fifth of the tibia is seen a comparatively large conical protuberance, with a smaller one immediately below, which latter has a symmetrical growth on the left side. At the junction of the upper with the middle third of the fibula a bony excrescence can be easily felt, though it is not sufficiently large to be seen. A similar one, an inch or two higher, can be seen on the left side. Above each pair of malleoli are tumours very nearly symmetrical. On the left, above the external condyle of the femur, one can easily make out a conical exostosis. The urine gave a high specific gravity; in other respects it was normal. None of the tumours in this case were observed prior to the fourth year. While an infant he was exceedingly delicate, but since the

second summer has enjoyed good health. It would seem from the history of this case, and from the curvature of one or two of the long bones, that a rachitic diathesis was present. I am disposed to regard it, for obvious reasons, merely a coincidence. Like his sister, he suffers much from headache.

CASE IV.—Annie R., a plump, hearty looking girl, four years of age, was examined March 15, 1876, and on both clavicles, near the acromial end, small nodes, symmetrically placed, could be seen. The spines of the scapulæ presented the same prominences, only smaller in degree, as was observed in the preceding cases. None were discovered elsewhere. The father had only noticed these quite recently.

It may be well to state that I have examined the cranial bones of these four cases with some degree of care, and have failed to find any abnormal protuberances, except a soft wart-like tumour, about the size of a half nutmeg, on the crown of head in Case I.

No theme opens a wider field for speculation than heredity. We seek for causes in all departments of medicine, and after diligent search are apparently satisfied. Specifics in therapeutics, from time to time, render clear the subject of etiology, while post-mortem examinations frequently throw a flood of light on theories, and almost as frequently leave us still clinging to untenable ones. Many lesions of the nervous, as well as of the osseous system, are referred to that ultima Thule, syphilis, and when this scourge of humanity *unfortunately* fails to be present, we oscillate toward heredity. We then know that the father or great-grandfather was the subject of a like disease, and through some mysterious process propagated it to the descendants.

I have questioned the subject of Case I. very rigidly as to his ancestry, and have sought for some cause of this diathesis in his father, who seems to have been the first in the ancestral line thus affected. Three or four paternal uncles were soldiers in the Prussian army, and he thinks that his father served a term in early manhood. Some pathological writers think that the musket, as used in the Prussian service, induces near the deltoid muscle, with comparative frequency, a growth called the "drill bone." Yet even in the reported cases an osseous diathesis is said to have existed. The old man seems to have enjoyed excellent health, fell from a wind-mill, a distance of eighty (?) feet, receiving only a slight injury (this fall was six years after the birth of the son, whose history I have just recorded), and lived to an advanced age. In the absence of facts, then, I venture the opinion that a drill bone was occasioned while in the army, and that to his children and grandchildren were transmitted the deformities. This, at best, is only a fanciful theory, and I give it for what it is worth. In the family are two brothers both of whom are known to have exostoses, and three sisters, no one of whom is thought to have anything of this nature. In the third generation, however, the female descendants show, at a comparatively early age, tumours, both on the clavicles and the scapulæ.

I need not dwell on the pathology of this lesion, other than to refer those interested to the writings of Stanley, Virchow, Paget, and Billroth. The exostoses herein described are most likely of the spongy or cancellous variety. Those of the ivory variety appear on the bones of the face, skull, pelvis, and occasionally the great toe, and occur so seldom that they are classed by Billroth among the curiosities. The spongy exostosis is covered with a layer of cartilage, and ossifies toward the centre. At the age of puberty ossification ceases.

Passing over the question of diagnosis, I propose to devote a short space to the complications arising, meaning thereby the bones most frequently involved, and the injury mechanically to neighbouring parts.

Mr. Paget¹ reports the case of a boy in St. Bartholomew's Hospital, who had symmetrical tumours on the radii, humeri, scapulæ, fifth and sixth

¹ Surgical Pathology, p. 541.

ribs, fibulæ, and internal malleoli. On the ulnar side of the right forefinger, he had an unmatched tumour, which proved so inconvenient that, at the father's request, Mr. Lloyd removed the finger. The father of this child had as many, or even more, tumours, and all had existed from his earliest childhood. No direct ancestors, or any other children, had similar growths; but four cousins, one female and three male children of his mother's sister, had as many of them as himself.

In the same hospital, Mr. Stanley¹ had a case, male, æt. 31, with fifteen distinct exostoses, symmetrically located near the articular extremities of the legs and arms, the growths having begun in early infancy. He was a drunkard, and in his frequent falls bruised the exostosis near the wrist, inducing necrosis. A removal, with good results, is recorded. A half brother of this man had tumours similarly situated. The mother had married twice, and one son by each marriage inherited the peculiar diathesis.

In the Transactions of the Pathological Society of London,² Mr. Wm. Adams reports a case on which he operated for the removal of a bony tumour from the posterior surface of the right fibula. Profuse suppuration followed; but in six months the patient recovered.

In the service of Dr. Poore,³ at the Charing Cross Hospital, a case occurred presenting exostoses at the sternal ends of clavicles, inferior aspects of the spines of scapula, the upper extremities of humeri, carpal extremities of the radii and ulnæ, points near one or the other extremities of most of the metacarpal bones, upper portions of femora below great trochanters, upper and lower ends of tibiæ and fibulæ. No one of these growths demanded removal. A child of this man, four years of age, appeared at the same time, and pathologically was a complete miniature of the father. Attention was first called to this child when nine months of age. The maternal grandfather and one sister were reported to have had similar tumours.

In my own report I find that the first case has one flat bone represented, but the seat of the tumour is at no one of the centres of development. The origin of the deltoid and the insertion of the trapezius are in intimate relationship with its base. Seven of the long bones are represented, the epiphyses of only three of which are involved, and the line of muscular attachment in no one of which is at all implicated. The second case, as well as the third and the fourth, gives the same flat bone as a point of lesion. Fifteen long bones in the second, nineteen in the third, and two in the fourth are involved. The epiphyses are in close proximity, but can scarcely be predicated as conjoined even. The muscular attachments are likewise undisturbed. An additional flat bone, the rib, I should have stated, in the second case, and four in the third, are found affected. It would seem, then, as I have previously intimated, that, when heredity figures to any extent, Nature very carefully selects those bones, and those points of a bone which are least likely to interfere with the functions of joints or muscles.

As opposed to this I shall very briefly refer to some instances where

¹ Med. Times and Gazette, vol. ii. 1853, p. 39.

² Vol. xxiii. p. 211.

³ Lancet, Nov. 29th, 1873, p. 771.

heredity is not involved in the etiology, but where injuries or disease take an active part.

Mr. Stanley in his work on *Diseases of the Bones* reports a case with an exostosis on the humerus dividing the ulnar nerve. A second case he refers to wherein the exostosis grew from the posterior surface of the clavicle, pressing upon the subclavian artery, and thus simulating aneurism. Sir Astley Cooper's case¹ in which a bony growth from the sixth or seventh cervical vertebra compressed the subclavian artery is familiar. Andral² reports a case in which an exostosis from the body of a vertebra pressed upon the œsophagus. Dr. Reid³ reports that a conical exostosis in a case under his care grew from the second cervical vertebra, and caused fatal compression and softening of the spinal cord. A boy in St. Thomas's Hospital⁴ had an exostosis from the inner table of the skull, producing epilepsy, which was relieved by a trephine. Mr. Henry Arnott⁵ removed a small bony tumour of this nature from the lower end of the right femur in a girl æt. 18, the pain and stiffness at the knee-joint being an indication for the operation. Erysipelas followed, and death supervened one month from the date of the removal. Symmetrical tumours were found post-mortem on pelvis, on each rib near both costal and spinal extremities, on sides of the bodies of the vertebræ, and on the lateral processes of the same. The first sign of any exostosis was at the close of an attack of acute rheumatism when eight years of age. In a case presented by me at the New York Pathological Society, March 24, 1875,⁶ bony growths existed in the neighbourhood of the hip-joint, giving rise to some of the symptoms of morbus coxarius. The greatest number of exostoses found on any one individual was in the case reported by H. Ebberth,⁷ sixty-five being the number. Acute rheumatism seemed to have been the immediate cause of so extraordinary a development. The long, short, flat, and irregular bones were duly represented.

As to treatment I know of nothing that is even reported as successful. In one case I have used lactic acid for a short time, with no satisfactory result to record. Removal, of course, is indicated if an exostosis interfere seriously with a joint or vital organ. A point of interest has been raised by Dr. John Chiene⁸ in the treatment of pedunculated tumours by fracture. His point is that the growth thus broken off may be absorbed, and one case he reports, of a boy æt. 10 years, who fell while at play and broke a pedunculated exostosis loose from its attachment. Complete absorption was found to have taken place at the end of a year. Mr. Maunder,⁹ on the strength of this report, forcibly broke an exostosis from

¹ Surgical Essays by Cooper and Travers, p. 128.

² Pathological Anatomy, Translation, vol. ii. p. 278.

³ London and Edinburgh Journal Med. Sciences, March, 1843.

⁴ Travers, Further Enquiry concerning Const. Irritation, p. 285.

⁵ Transactions Path. Society Lond., vol. xxiii., 1872, p. 207.

⁶ Medical Record, April 21th, 1875, p. 300.

⁷ Deutsche Klinik, 1862, No. 9, p. 91.

⁸ Ed. Med. Journal, July, 1874, p. 50.

⁹ Lancet, Nov. 7th, 1874, p. 657.

the bone, located near the knee, with no unpleasant effects following the operation. He subsequently reported that the osseous tumour had re-attached itself to the bone, but at different points, so that the functions of the joint were undisturbed.

135 East 42d Street.

ART. XII.—*A Supposed Case of Rabies Canina treated with Strychnia and Woorara; Recovery.* By B. A. WATSON, M.D., Surgeon to Jersey City Charity, and St. Francis Hospitals, Jersey City, N. J.

SUNDAY morning, Feb. 6, 1876, between ten and eleven o'clock, I was summoned in great haste to see Mr. McC., of this city, aged about forty-five, a strong, able-bodied man of temperate and industrious habits, who had previously enjoyed uniformly good health. I found him in his sleeping apartment, a back parlor, suffering with a severe chill, which was accompanied by chattering of the teeth, violent retching, and the occasional vomiting of a little dark grumous fluid. There was suffusion of both eyes, equal dilatation of the pupils, marked congestion of the conjunctiva of the right eye, but slighter of the left, turgescence of the vessels of the face, giving the countenance a livid appearance. Respiration sighing, pulse frequent and irregular, and the tongue furred, grayish-white. He was highly nervous, apprehensive, and unwilling to be left alone. Says "there is a sensation of tightness or squeezing" over the præcordial region. In answer to my question, "how do you feel?" he replied, in a nervous, jerking voice, "I am all right—nothing the matter with me." He then called for a glass of water, which he took and tremblingly drank, evidently to convince me that he did not have hydrophobia.

I directed him immediately to be put in bed, well covered with blankets, mustard draught to be applied to the epigastrium, bottles of hot water to be placed around him, and the temperature of the room to be raised as soon as possible to 80° F.

I then withdrew from the room, and learned from the family the following history, viz.: On or about the 25th of November last, Mr. McC. was presented with a young Newfoundland dog, which appeared at the time to be in a healthy condition; it was playful and good natured, ate and slept well; but within a month exhibited signs of illness, becoming restless, frequently starting up from apparent sleep, growling, barking, and snapping at imaginary objects. Soon after these symptoms were observed, the dog bit the servant girl, both of Mr. McC.'s children, and a young nephew. Mrs. McC., being now terribly alarmed, informed her husband, when he came home at noon, that the dog was sick, and insisted that it should be sent away from the house. The husband endeavoured to quiet her fears, assuring her that he would examine the dog, and if anything were the matter with it he would send it off. He then proceeded to make the examination, and, while thus engaged, was bitten through the index finger of the right hand near the root of the nail. The examination being satisfactory, the dog was drowned. The wound readily healed. These events occurred about the 20th of December last. The servant girl¹ (previously

¹ See accompanying report of this case by Drs. McLoughlin and Culver.

mentioned as the first one bitten by the dog) died at St. Francis Hospital, in this city, Feb. 1, 1876, of *unmistakable rabies*.

Mr. McC. had been complaining for a week or ten days prior to this visit. He had been low-spirited, melancholy, nervous, irritable; had taken little food, complained of shooting pains through various regions of the body, and other abnormal sensations which he was unable to describe fully.

Feb. 5th, he went to the Jersey City Opera House at the solicitation of his brother, who thought the entertainment given there might possibly dispel the melancholy, and relieve the nervous agitation with which his brother was suffering.

Having remained there a short time, he informed his brother that he was too ill to stay any longer, and then went home. The patient attributed all these symptoms to a cold with which he supposed himself to be suffering. This morning, Feb. 6th, he arose at the usual time, took more breakfast than at any time during the previous week, but feeling unwell, he lay down and soon fell asleep. After sleeping two or three hours he suddenly awoke, and calling his family, a messenger was immediately sent for me. I responded promptly to the call, and found him in the condition previously described.

Having obtained the foregoing history of the case, I ordered one-twelfth ($\frac{1}{12}$) of a grain of strychnia every three hours, and directly sent a messenger to Prof. Flint, of New York, requesting him to meet me in consultation at his earliest convenience. 1 P. M. I again saw the patient, and found his pulse down to 80; respirations only five per minute; inspirations deep and sighing. Complains of a sharp lancinating pain in the left arm and hand. Retching and vomiting relieved. Less constriction of the respiratory muscles. Says he is feeling better. 4 P. M. Consultation with Prof. Flint. Pulse 76; respirations 11; inspirations still sighing. Does not complain of any "sensation of tightness or squeezing" over the præcordial region, or pain in the hand or arm. It was determined to continue the treatment with strychnia for the present. 7 P. M. Condition same as at 4 P. M. Ordered one ounce of Rochelle salt.

Feb. 7th, 9 A. M. Pulse 78; respirations 12; inspirations slightly less sighing than yesterday. Bowels moved twice during the night. Face less livid. Less congestion of the conjunctivæ. Had some sleep during the night. Complains of being thirsty. Has taken considerable food at my earnest solicitation. 12 M., 4 P. M., and 10 P. M. I saw him, at which times his condition remained about the same as in the morning.

8th, 9 A. M. Pulse 84; respirations 11; inspirations still sighing; has had little sleep during the night, but has taken an abundance of nourishment. "The sensation of tightness and squeezing over the præcordial region" has returned during the night, but is not constant. Poultices were applied over the thorax. He is now perspiring freely. 12 M. Not so well as in the morning. Is now suffering with *aërophobia*; a slight current of air causes shuddering, the countenance at the same time expressing intense anxiety, mingled with dread. He has just suffered severely with a paroxysm caused by a current of air from the door which opens into the hall from his room. There is much muscular twitching, which extends over the whole body. This door was now fastened, and every possible care taken to avoid, in the future, all currents of air in the sick-room. Visitors entering the room from the street are admitted to the hall, this door closed behind them, then passed to the front parlor,

which is kept constantly well heated, and then the door opening into the front parlor from the hall is closed, and then the door opening into the sick-room is so guarded that it can only be opened sufficiently to admit the largest guest who was in the habit of entering, and an attendant is constantly ready, who closes the door as soon as the entrance is effected. The patient's thirst is very much increased, and he is more apprehensive. He is no longer satisfied with the presence of half a dozen friends in the room, but wishes the room crowded. He is unusually talkative. 5 P. M. Condition remains about the same as at noon. Ordered a dose of Rochelle salt. 10 P. M. Pulse and respiration unchanged since last visit. Aërophobia slightly increased.

9th, 9 A. M. Bowels moved freely during the night. A paroxysm came on at 1 A. M., and lasted until nearly 2 A. M. This paroxysm was apparently excited by finding himself in the room with no other attendant than his wife. He seemed greatly frightened when he awoke, looked wildly around the room, and called in frenzied tones for his brother and other attendants who had been with him until near midnight, but had left after seeing him sleeping. The strychnia was omitted from midnight until 11 o'clock this morning without the knowledge of the attending physicians. Patient imagines the medicine is injuring him. Pulse 92, and more feeble than at any previous examination; respirations 11; much muscular twitching, sensation of fullness of the stomach, gaseous eructations, and "tightness or squeezing" over the præcordial region. 1 P. M. Pulse 86, and stronger; respirations 11. It is now two hours since he took one-eighth ($\frac{1}{8}$) of a grain of strychnia. 5 P. M. Pulse 72; respirations 15, and less sighing; no muscular twitching. At 2 P. M. he took one-twelfth ($\frac{1}{12}$) gr. strychnia, and at this time (5 P. M.) he took the same quantity. He now asked me if I would allow him to drink water, and, as I answered in the affirmative, an attendant asked him if he would have some at that time. He refused, although he was complaining of great thirst. I was followed to the door, while in the act of leaving the house, by one of the principal attendants, who informed me that the patient had not taken a drop of cold water during the preceding twenty-four hours, and could not be persuaded to make the attempt, but that he had taken warm drinks freely. 10 P. M. No change.

10th, 9 A. M. Pulse 80; respirations 17. Passed a very restless night, with very little sleep. Does not take nourishment well. 1 P. M. Has had one paroxysm this morning. Pulse 100; respirations 15. Considerable muscular twitching; nervous and more apprehensive. 5 P. M. Has had another paroxysm this afternoon. Pulse 120, and all other symptoms proportionally intensified. 7 P. M. Has just recovered from another paroxysm; gaseous eructations are now very distressing. Has just vomited. 10 P. M. Evidently growing worse. Pulse more rapid; more nervous and apprehensive; more muscular twitchings, and greatly distressed with gaseous eructations. 11.30 P. M. At this time I was obliged to be away, but Dr. McLoughlin, who was called in on Tuesday, and who had been in attendance with me since, remained with the patient, and describes the paroxysm as follows, viz.: "The paroxysm consisted of clonic spasms of the respiratory muscles, each lasting one or two minutes, followed in quick succession by others, and each succeeding one increasing in duration and severity, without any complete intermissions. At the end of an hour the spasms had become so severe and the dyspnœa so great, that he could not speak above a low whisper, and even this whis-

pering was of short duration; from the commencement of the paroxysm the voice had become gradually lower and lower, so that finally he made his wishes known to his attendants by beckonings. During and after the paroxysm he was extremely sensitive to changes of temperature, the slightest current of air causing the paroxysm to recur. At his desire the temperature of the room was kept at 82° F. During the paroxysm he was constantly calling and beckoning for poultices, which were applied at the highest temperature consistent with the feelings of the patient, as only a slight increase of temperature was needed to produce a blister. He afterwards told us that he thought the hot poultices afforded him some slight relief. The face and manners of the patient during the paroxysm indicated the highest degree of anxiety and alarm, but he was apparently conscious, and at that moment seemed to keenly appreciate the peril of his situation. When able to speak, he called on me in anxious tones for help; begged me to do something to relieve him. At 1 o'clock the paroxysm began to remit, and had wholly ceased at half past one. He was frequently expectorating tenacious saliva. Respirations were gasping and irregular. The severity of this paroxysm satisfied me at the time that he could not possibly survive four more of equal severity."

The patient had been unusually talkative during his entire illness, but, as soon as he had recovered sufficiently from the exhaustion produced by the last paroxysms he talked incessantly, appeared unable to stop, and would not allow others to speak or in any way to interrupt him. He had made up his mind to die, and seemed resigned to his fate; but when I entered the room in company with Dr. McLoughlin for the purpose of injecting the woorara, he requested us to wait, and then proceeded to say adieu to his numerous friends assembled around his bed, some of whom he admonished of future danger, and at the same time urged them to a higher and better life. He spoke on this subject very rapidly and with much earnestness, although naturally a man of few words and not possessed of fluency or eloquence. Having finished his pathetic remarks, he turned to us and said: "Doctors, proceed to perform your duty."

11th. 2 A. M. Injected subcutaneously one-sixteenth ($\frac{1}{16}$) gr. woorara. During the previous twenty-four hours he had slept very little; twenty minutes after the injection he fell asleep, the sleep being disturbed and restless, occasionally starting up and then falling asleep again. 5 A. M. Being at this time in an adjacent room I heard the patient wrangling with his friends, having already thrown off the poultices and bedding, in opposition to their remonstrances and even resistance. When I entered the room he immediately recognized me; asked me where he was and what was the matter with him. I informed him that he was at home and that he was very ill. He replied "this is very strange! very strange! I can't understand it," and then asked "how long have I been sick?" and immediately following the question with the declaration "I am no longer sick; I have only a sore throat." He was now constantly putting his hand to his throat, hawking and making a great effort to clear the same, but apparently with little success, as he failed to expectorate any considerable quantity of sputa. We finally persuaded him to lie down in bed, and to permit the bedding to be again placed over him; and within a few minutes he was able to recall the past, and soon became perfectly rational. This delirium was of short duration, did not continue more than half an hour, and was the only attack of the kind from the commencement to the termination of the disease, and had been preceded immediately by retching

and vomiting. I now injected as before one-ninth ($\frac{1}{9}$) gr. woorara, after which he slept better and exhibited less nervousness. 8 A. M. Injected one-sixth ($\frac{1}{6}$) gr. woorara, which was followed by a quiet sleep. 10 A. M. Patient now quiet and rational; pulse 96; respirations 17; no sighing. Declares that he is feeling perfectly well; wholly indifferent to currents of air, in fact all unfavourable symptoms have disappeared. Thinking it better to continue the use of the woorara lest the symptoms should reappear, I requested Dr. McLoughlin to inject one-sixth ($\frac{1}{6}$) gr. at 11 o'clock, at which time I should be necessarily absent. The patient refused to allow the doctor to give the injection, but took a bottle of citrate of magnesia without the advice of his medical attendants. He has had no return of the symptoms of the disease from that day to this.

That this interesting case may be more thoroughly understood, I shall now review so much of the daily reports as may seem necessary to enable the reader to appreciate the value of the symptoms, and establish the true nature of the disease. In the above report symptoms are mentioned, but their duration is often left to conjecture or at least not definitely stated. The chill from which the patient was suffering when I first saw him, had disappeared previous to my second visit, and did not again appear. The retching and vomiting present on the first day, returned on the third and fourth days, and became so troublesome on the fifth day that the patient was unable to take any appreciable quantity of food, and less than half the quantity of brandy which he had taken during either of the two preceding days.

He also complained very much of the strychnia; said "it nauseated him," and owing to this condition only a small quantity was taken, and a still smaller quantity remained in his stomach, probably less than one-fourth ($\frac{1}{4}$) of a grain during the entire day, was retained, as he vomited occasionally immediately after taking this medicine. There was a gradual increase in the severity of these symptoms during the whole disease, and no cessation until after the woorara was administered. The congestion of the conjunctivæ and the turgescence of the vessels of the face, steadily diminished, and had entirely disappeared on the morning of the fourth day. The constrictions of the respiratory muscles were paroxysmal in character, confined entirely to this group, at least affecting only the larynx, trachea, and lungs, and are sufficiently described in the daily report. The dilatation of the pupils existed three days. The nervous excitability, apprehensiveness, dread of being left alone, and the sighing respiration, were present during the entire disease; although varying in intensity, apparently much increased by the clonic spasms of the muscles; but these all disappeared with the use of the woorara. The respirations varied greatly; at times being remarkably slow, but gradually increasing in rapidity towards the termination of the disease. The sharp lancinating pain in the left hand and arm was of short duration, probably lasting two or three hours. Pulse variable; always more rapid during and immediately after the spasm, and more irregular and feeble.

The *ærophobia* made its appearance on the third day of the illness—increased uniformly until the injection of woorara put an end to all further trouble.

The patient was not apparently affected by bright light, the light of any shining object, or by bathing the hands and face in water. The *ærophobia* alone indicated the excessive hyperæsthesia.

He complained slightly of thirst on the second day, which gradually

increased until the morning of the sixth day, and on the fifth day gave him much suffering. Soon after the beginning of the thirst he endured very much pain from a sensation of fulness, and great distress in the præcordial region, which were accompanied with gaseous eructations. The last-mentioned symptoms followed the same course as the third—especially the gaseous eructations, which became extremely troublesome on the fifth day.

Early in the disease he began to perspire freely—day after day it increased until finally the bed and bedding were thoroughly saturated with the perspiration, thus giving the patient the benefit of a continuous hot bath, but here again the cessation came when the woorara was injected.

The only aversion to fluids was manifested by the patient refusing to take cold water on the third day of his illness, and persistently thereafter until his recovery was established—although constantly complaining of thirst during this period, he only drank warm fluids in considerable quantities. I am not aware that water or other fluids were offered to him at any time during the existence of a spasm. I incline, in fact, to the opposite opinion.

The patient endeavoured to convince himself and friends during his illness, that he was not suffering with rabies; especially was this the case when free from pain and distress, and a few hours free from a paroxysm, but on the fifth day the paroxysms being frequent, the suffering severe and continuous, his countenance became greatly dejected, and he now apparently abandoned the only hope that had previously cheered him.

He had previously imagined that all his illness was caused by the medicines, and consequently blamed his medical attendants, but during this day his confidence in them seemed to be fully restored, and he begged them frequently for relief, and desired them constantly at his bedside. The most singular part of his conduct is, that so soon as he found himself completely relieved, and again placed on the highway to health, his old fancy returned, and he now *pretends* to believe that the only cause of his suffering was due entirely to the medicine.

The important question to determine in connection with this case now, is entirely one of diagnosis. Do the facts and symptoms warrant the conclusion that this patient suffered with genuine rabies canina? This question raises another which has a prior claim on us at this time. How is the diagnosis of rabies made? Is there any pathognomonic symptom of this disease? The last question *must certainly be answered in the negative*; although the vulgar belief is, that the inability to drink water, or, at least, great aversion to it, constitutes *the* principal phenomenon, and even among physicians it is not unusual to speak of this symptom as the characteristic one of the disease.

Inability to drink water is, however, found to exist in many other diseases, particularly hysteria, spurious hydrophobia, and many morbid conditions of the throat. Thus Prof. Elliotson says:—

“People will take an antipathy to all liquids; and sometimes, in common sore throat, there is such a spasmodic disposition in the throat, that the attempt to swallow excites great irritation; and the recollection of it excites fear at the very sight of water, while the attempt to drink it is terrific. On the other hand, the fear of water, the fear of swallowing, is not universal in hydro-

phobia. Persons sometimes swallow very well in hydrophobia, and put their hands into cold water; dogs will swim across a stream, and some persons, it is said, drink quite well to the very last. I believe I have seen this occur myself."¹

Prof. Samuel Cooper says :—

"The question has sometimes been entertained, whether rabies can ever exist quite unattended throughout its course with a dread of liquids? The possibility of such a case was believed by Mead and others;"² and the same author adds: "The dread of swallowing liquids, though the most singular symptom of the disease, constitutes but a small part of it."³

A. Poland, Esq., says :—

"The dread of water, the almost characteristic symptom in man, is not always present, as may be proved in recorded cases. On the other hand, this symptom may be met with in other diseases: thus in hysteria we may have what is called hysterical hydrophobia, where the sight of water induces a paroxysm of hysteria, but this only lasts a short time; in inflammatory affections about the throat, larynx, and neck, and in certain diseases of the brain, there may be a difficulty and dread in swallowing fluids, which is called symptomatic hydrophobia; in hypochondriasis and melancholia there is sometimes painful and convulsive deglutition."⁴

Prof. Romberg says :—

"A negative, but no less important symptom, is the absence of fear of water or hydrophobia."⁵

Prof. Abraham Colles, speaking on this subject, says :—

"You see, therefore, that the popular notion of the horror of water forming the great diagnostic of hydrophobia is incorrect; we have the same horror of drinking in some cases of hysteria, in some affections of the brain, in tetanus, etc., while, in some cases of hydrophobia, they drink with little reluctance or difficulty."⁶

Prof. Frank H. Hamilton, speaking on the differential diagnosis between this disease and tetanus, hysteria, etc., says :—

"It is not, however, so much the presence or absence of any single phenomenon that determines the diagnosis, as the complete history and concurrence of symptoms. Nowhere else, it can safely be affirmed, is the same or even a similar group of morbid phenomena presented."⁷

Having thus cited a few authorities for the purpose of showing the incorrectness of the popular idea that the dread of water is the pathognomonic symptom of rabies, I shall now call attention to a few well-authenticated cases—terminating fatally without the presence of this symptom. The case of Robert Hodson, who was bitten by a rabid dog, which died soon after inflicting the wound, is reported by Samuel Cock, who says :—

"He had no dread of liquids, nor did he ever refuse drinking what was offered to him, when he was sensible enough to understand what was meant by the offer. . . . He was now put into a tub of warm water, up to the chin,

¹ The Principles and Practice of Medicine, 2d edition, London, p. 711.

² Cooper's Surg. Dict., 2d edition, London, p. 790.

³ Ibid., p. 791.

⁴ Holmes's System of Surgery, vol. i. p. 691.

⁵ Diseases of Nervous System, vol. ii. p. 48.

⁶ Lectures on Surgery, Phila. 1845, p. 48.

⁷ Principles and Practice of Surgery, p. 131.

which did not the least discompose him, and when he got to bed again, he said he had no pain anywhere."¹

Mr. Holmes Coote, writing to *The Times* in regard to hydrophobia, says, that "in the course of thirty-five years' observation at St. Bartholomew's," . . . he "saw only two cases of it; and one of these so far belied the vulgar pathology as to the patient's repugnance to water, that the sucking of ice gave him the greatest relief."²

Another symptom of rabies—the clonic spasm—is of sufficient importance to demand our brief attention.

The authorities who have written on the subject of rabies, do not fully agree in regard to the muscles principally affected by the spasms in this disease; probably for the reason that it seldom happens that the same group are equally affected in different cases, although there are very few, if any, cases in which the muscles of respiration are not largely involved.

Dr. J. Lewis Smith, in an "Analysis of One Hundred and Thirty-one Cases of Hydrophobia," in speaking of the paroxysm, says :—

"The proximate cause of the attacks was a spasm of certain muscles; though, from the nature of the disease, it was difficult to tell exactly which or how many. The sufferer often referred to the throat as the seat of his distress, and the muscles in this region were, sometimes, visibly in a state of spasmodic action. Occasionally a constriction of the chest was complained of, as in Nos. 18, 42, and 44; or, across the abdomen, as in Nos. 45 and 50, leading to the belief that the thoracic and abdominal muscles were involved."³

Prof. Thomas Watson says :—

"There may be a spasm of the glottis, but I doubt it."⁴

Mr. Robert Druitt says :—

"Hydrophobia is a disease brought on by inoculation with the saliva of a rabid animal, and characterized by intermitting spasms of the muscles of respiration, together with a peculiar irritability of the body and disturbance of the mind."⁵

Having already given some attention to certain symptoms, let us now proceed to examine the question of diagnosis.

The correct diagnosis of a disease can only be made by giving to every symptom and group of symptoms their proper place and value. This may be aptly illustrated by supposing ourselves in possession of numerous blocks of wood, or other material, of various patterns and dimensions. The blocks being of various patterns and dimensions may represent not only symptoms, but also the value of the same. Let us now suppose ourselves in possession of a certain number of images—each image representing a particular disease, and also in possession of the knowledge that only a single fac-simile can be possibly made with the blocks in our possession. The effort to make a diagnosis may now begin; the symp-

¹ Medical Histories, edited by Ferriar, 1st Amer. ed., p. 313-4.

² Lancet, Dec. 1868, p. 754.

³ N. Y. Journ. Med., vol. xvi., No. 1, p. 52.

⁴ Pract. of Physic, edited by Condie, p. 405. New Amer. edit., Phila. 1858.

⁵ Modern Surgery, edited by Sargent, p. 164.

toms are arranged in groups—each examined critically to ascertain that each symptom fits perfectly in its place, and should this be the case, then we have succeeded in demonstrating one stage of the disease. The same care should now be taken in putting together the different groups, and if the groups are found to fit together perfectly, then the image will be perfect, and the question of disease settled. In accordance with the suggested system, I have carefully examined the symptoms of this case, but have failed to produce anything like a satisfactory image of tetanus, hysteria, pseudo-hydrophobia or phrenitis. Had the case terminated fatally, probably no physician could have been found who would have questioned the correctness of the diagnosis rabies canina, but notwithstanding the fact that the patient is now alive, I am still firmly convinced that the diagnosis was correct.

In reviewing the development of this case, which has terminated thus favourably, so unexpectedly to myself and the medical gentlemen who have seen the case with me, I shall detail the management from the beginning to the end of the disease, and also mention some of the reasons for the selection of the remedies used. The strychnia was intended to be used regularly in the prescribed doses throughout the entire day, except while the patient was sleeping. I am, however, satisfied that it was not at all times taken with perfect regularity. The entire quantity of this drug used during the five days' illness of the patient was about two and one-fourth ($2\frac{1}{4}$) grs. It was our intention when we commenced the use of the strychnia to continue it in gradually increasing doses until its specific action was produced, but the patient did not take the medicine with that degree of method which insures confidence and enables a physician to push the use of such powerful remedies until the desired effect has been attained. I am now satisfied that the plan of administration adopted by Dr. Fell in the treatment of tetanus with strychnia is highly advantageous, and should be followed in all cases of hydrophobia where this drug is used.

The selection of this remedy for this case was based on the following reasons: 1. Rabies and tetanus belong to the same class of diseases, and the medicines used advantageously in the latter ought, therefore, to be beneficial in the former. 2. If we can rely on the published reports of cases of tetanus cured with it, then we are fully assured that no remedy has ever been previously used with anything like the same success. Finally, the treatment of rabies with the remedies heretofore used has not been sufficiently successful to justify a very strict adherence to any particular drug or method. Prof. Alfred Stillé says:—

“Even in *tetanus* its power has been unequivocally displayed. In 1847, Dr. Fell, of New York, published seven cases of tetanus, six of which were certainly of the traumatic variety, and which all recovered under its use. His plan of administering it was to give one-eighth or one-tenth of a grain, and in two hours one-sixteenth of a grain, then reducing the dose still further, and only to the extent of producing specific signs of its influence after each one. Dr. Kollock

also relates a case of traumatic tetanus occurring in a negro girl, which was cured by strychnia, given in doses of one-twelfth of a grain every two hours. Another cure of the same disease, by the same means, is related by Dr. L. Bartlett."¹

The injections of woorara were given by myself, and I am, therefore, able to speak positively in the daily report. The specimen was procured through the kind assistance of Prof. Austin Flint, and was in a solid state. I requested Mr. Phillips, of this city, to prepare it for use, and have received from him the following note:—

Dr. B. A. Watson, Dear Sir: The solution of woorara for hypodermic injection was prepared as follows: one grain of woorara was first reduced to a fine powder, and to it was added with constant stirring one fluidrachm of distilled water. Alcohol of 95 per cent. was now added, drop by drop, till a nearly perfect solution was obtained. Sufficient diluted alcohol of the U. S. P. was then added to make the solution measure two fluidrachms. Prepared in this way, twelve minims of the solution should represent one-tenth of a grain of the drug. The slight turbidity of the preparation was probably owing to extraneous matter which existed as an impurity. Yours, truly, Geo. W. C. Phillips, 124 Newark Ave.

The woorara was finally used because of its well-known physiological action, and also for the reason that the strychnia, which at first seemed to be highly beneficial to the patient—and I am fully satisfied that it did delay the progress which the disease would otherwise have made—could no longer be given on account of the vomiting.

The conviction that I have just expressed in regard to the action of the strychnia is based on the fact that the patient after each paroxysm suffered with nervous twitchings, and at the same time the pulse was observed to be much more frequent and feeble than before the spasm. In this condition, it was invariably the case that, if the strychnia was taken immediately after the spasm, the twitchings rapidly disappeared, and the rapid pulse became slower and fuller; but when the remedy was omitted the nervous and depressed condition continued much longer. Beside the medicines already mentioned, the patient drank freely, during his entire illness, of a decoction of *Scutellarix laterifloræ*.

He commenced the use of brandy punch on the second day of the disease; and on the third and fourth days, used each day one quart without showing any symptoms of intoxication, but during the fifth day he could not be prevailed on to take even one-half this quantity. During the first part of the illness he ate and slept well; but during the latter part he took less food and had much less sleep.

The profuse diaphoresis, which has been previously mentioned, I think may have had a beneficial effect, and I find on examination an article written forty-six years ago, entitled, "Proposal to employ Heated Air in Hydrophobia," in which appears the following recommendation:—

"It is my wish to propose, through you, to the public, that future cases of this disease may be submitted to the full influence of highly heated air, so as

¹ Therap. and Mat. Med., 4th edit., vol. ii. p 187.

to produce from the skin and lungs a copious exhalation. This treatment affords to my mind a hope of success, because in all the more virulent and manifestly contagious diseases, as plague, smallpox, measles, and scarlatina, there is an effort to throw off the poison by cuticular action; and, in the plague, those who get bubo and cuticular disease early do for the most part recover, and in some instances *spontaneous sweating has appeared to carry off the disease.*"¹

I will only say, in concluding the report of this case, that I am now fully satisfied that the diagnosis of the disease made during the illness of the patient is correct, even without the aid of a post-mortem examination; and were I to assume the responsibility of managing a case of rabies to-day, I should not materially change the treatment from that followed in this case.

[Since the preparation of the above report, a case of "Rabies Successfully Treated by Woorara," by Offenbergl, of Berlin, is noted in *The Medical Record*, March 18, 1876.]

I have also received the following letter from Prof. Flint, and with his permission to publish the same :—

New York, April 26, 1876. Dear Doctor: I saw your patient, McC., with you in consultation, Feb. 6, 1876. I received from you an account of the case, as you have detailed it in your report up to that date, and also the statement that a servant maid in the family had died with unmistakable rabies. The symptoms which the patient presented at my visit, as I recall them, were as follows: The face was flushed, and the eyes somewhat injected. His expression denoted excitement and anxiety. He was restless; his busy movements were somewhat like those in delirium tremens. Brief paroxysms of rapid breathing occurred at short intervals, and there was frequent sighing. When I asked him how he felt, he answered, "I am awfully well." He showed no disposition to enter into any account of his feelings. The name hydrophobia was not spoken in his presence, nor was any reference made to his having been bitten by a dog. I requested that he should drink some water, which he did without any reluctance or difficulty.

In my consultation with you, I expressed the opinion that, although there were not then sufficient data for the diagnosis of rabies, taking into view the facts relating to the dog, the bite, and the case of the servant maid, the present symptoms foreshadowed that disease. I thought that within 24 or 48 hours the development of the characteristic features of the disease would render the diagnosis positive. I expressed this opinion, at your request, to some of the friends of the patient. The patient himself did not ask for my opinion.

I concurred with you in the treatment which you were pursuing, and in the propriety of employing the woorara when the disease became fully declared. At your request I procured and sent to you some woorara, which was obligingly furnished by Dr. John J. Mason.

My subsequent knowledge of the case is derived from your report. It is to be regretted that the case has given rise to sensational articles by newspaper reporters; but this, of course, should not stand in the way of a dispassionate consideration of the question whether the disease was, or was not, rabies. The recovery of the patient and the employment of woorara, render this question one of much importance.

The symptoms at, and prior to, my visit, are consistent with the supposition that the patient was in the primary stage of rabies; and, as it seems to me, we were fully justified in having the opinion which we both held at that time. Under the same circumstances I should again form the same opinion. The subsequent history shows the absence of the symptom which is generally a

¹ Journ. For. Med., vol. ii. pp. 262-3.

marked feature, and from which the term hydrophobia derives its significance, namely, laryngeal spasm excited by the effort to drink water, and consequent apprehension in making this effort. But I suppose it to be undoubtedly true that this symptom is not invariably present in cases of rabies. While, therefore, hydrophobic manifestations would have been valuable in a diagnostic point of view, their absence is not proof that the disease was not rabies.

Lyssaphobia may certainly be excluded. The patient appeared to be resolute in the belief that he had no serious affection. There is no ground to suppose that the phenomena were hysterical.

The character of the convulsive paroxysms is of great importance with reference to the diagnosis. The point of inquiry here is, were these paroxysms due to the strychnia? From your description they were not of the character which strychnia would produce, and the doses of strychnia were not sufficient to produce convulsive movements with disturbance of respiration.

The fact of recovery naturally excites scepticism in respect of the diagnosis of rabies. I am conscious of this in my own mind. Excluding, however, lyssaphobia, hysteria, and the toxical effects of strychnia, it is difficult to say what the disease was, if it were not rabies. To say the least, the supposition that the disease was due to the virus of rabies is not without the range of probability; and the case would, therefore, lead to the employment of the woorara in cases which admit of no doubt as to the diagnosis. Whether the disease was or was not rabies, the effect of the woorara appeared to be useful; and as a contribution to our at present limited knowledge of the therapeutical use of this remedy, the report of your case is interesting and valuable. It is hardly necessary to add, that should the woorara be found to have a curative power in rabies, you will have conferred a great benefit on medicine and on humanity by venturing upon its use, and by the publication of your report. Very truly yours, Austin Flint.

ART. XIII.—*Case of Hydrophobia ; Death. Early History of the Case.*

By T. J. M'LOUGHLIN, M.D., of Jersey City, N. J.

Subsequent History, with Remarks. By J. E. CULVER, M.D., Physician to St. Francis Hospital, Jersey City.

On Sunday morning, January 30, 1876, I was called to attend Lizzie M., a servant living in the family of Mr. James McC., of Jersey City. I noticed by her manner and appearance that she was quite nervous, and in an anxious frame of mind. In answer to inquiries made in regard to her previous condition, I was informed that she had been unwell for several days, but that since the day before she had been growing much worse. During this time she was known to have taken very little nourishment, but owing to the fact of her being regarded as unwell, this circumstance attracted little attention.

On the evening of Saturday, Mrs. McC., prompted by sympathy to do something to assist the girl, prepared some tea, which she wished her to take. When it was brought she showed some disinclination to drink. Being prevailed on, however, in the hope of benefiting her, she took a mouthful, swallowed it with an effort, and refused to drink any more, at the same time complaining that in the act of swallowing she had "a choking sensation in the throat," and that "it caused an oppression in her breathing." In addition I was told that she was troubled with frequent gaseous eructations, and, while I was examining her, she twice or thrice

belched up a quantity of wind, and declared that doing so afforded her relief. It was noticed also that, contrary to her usual cheerful disposition, she was at intervals quite melancholy, depressed in mind, and repeatedly sighed. The last was a constant symptom, and in the further progress of her illness was more marked. When questioned in regard to herself, she complained of pain and soreness in the portion of the præcordial region corresponding to the attachment of the diaphragm, and of an inability to get her breath, but she did not attach great importance to these symptoms. In an agitated manner, and with assumed cheerfulness, she frequently declared that her ailment was merely the result of a cold, that there was nothing the matter only that she could not get her breath, and that she believed there was something the matter with her lungs. Though nothing in her case pointed to disease of the lungs, nor to render examination of these organs necessary, I proceeded to inform myself of their condition, and took hold of her hand to assist her in sitting up. She hesitated a few seconds, then grasped my hand, and, making a forced effort, she raised herself by springing to a sitting posture. Immediately after she threw up her hands, and, with eyes widely opened and manner agitated, drew a short, sighing, interrupted inspiration. This passed quickly away, and with the exception of some slight excitement and uneasiness of manner, and a constant desire to impress those about her with the idea that there was nothing of importance the matter, her condition in the mean time betrayed no marked signs of a dangerous disease. I then made a careful examination of the lungs, but, as anticipated, the result presented no evidence whatever of any abnormal state of these organs. The percussion was normal, and the breathing vesicular in quality, though slightly weakened, everywhere throughout both lungs. There was nothing peculiar about her pulse then; it was regular, perhaps a little diminished in force, and beat ninety per minute. Her throat, being inspected, appeared slightly congested. There was nothing remarkable about her eyes—no noticeable redness—but the general expression of the face was somewhat apprehensive, and a little excited.

To test the report of her difficulty in drinking fluid, and observe the symptoms attendant on the attempt of doing so, I directed a glass of water to be brought. She said, "Oh no! I don't wish to take any now," and by her uneasiness of manner also showed some repugnance to the liquid. The water being brought, I offered her the glass, which she took with hesitation, paused a moment, and shuddered slightly, her face betraying some anxiety. She was about to set down the glass, when I urged her to drink. Then summoning her courage by making a strong effort of the will, she, with some degree of trepidation, brought the goblet to her mouth, took a mouthful, and quickly gulped it down. Immediately her thorax and shoulders were elevated, the arms flexed and raised in attitude to allow the greatest chest capacity, all the respiratory muscles became tense, the muscles of the neck also rigid, the head turned slightly to one side, thrown back, and fixed, while at the same time the eyes were widely opened, and her face presented a picture expressive of dread and agitation. The appearance of the paroxysm strongly resembled that produced by the sudden and unexpected application of a cold shower bath. For a duration of a few seconds her breathing was interrupted, after which the symptoms passed off, leaving her a little agitated. When she recovered her breath she said in a protesting manner, "Oh! there is nothing the matter with me, only drinking the water chokes me a little, and I can't get my breath, that's all."

At that visit I had no knowledge that she had been bitten by a dog or any animal, and, knowing the apprehensive disposition of the family, I avoided making inquiries on that head then, as I did not wish to have alarm created, and, it being my first visit, I wished to wait a little, to be more certain of the case, and be enabled to make a positive assertion of its character. I prescribed for her an anti-spasmodic mixture, gave some directions, and left.

During the night the male member of the family called at my office, stating that he was alarmed by the way she was behaving, that she was constantly tossing herself about in bed, and sometimes wanted to get out of it, that she was afraid to be left alone, and at times excited, and had a slight wandering delirium, so that they were obliged to stay up to care for her. I accompanied him to his house, and found her excited and restless as he described, her face wearing an expression as if, from the oppression of her chest, she dreaded being suffocated. She was easily quieted, however, by talking kindly to her, and frequently urging her to control herself and be tranquil, to do which when I was present she made an effort. Having allayed their fears as to any immediate danger, and administered a hypodermic injection of $\frac{m}{x}$ of Magendie's solution of morphia, I left for the night, my idea of the character of the case being still more confirmed by what I then learned.

Believing that in the progress of her case she might become troublesome, require to be controlled, and that the family would not be able to take care of her, I recommended her to be sent to a hospital next morning. When I arrived at nine o'clock A. M., I was informed that she was growing more restless and apprehensive, and had occasional spasms of the chest, which appeared to return more frequently and with increased severity. She had refused all liquids, and neglected even taking her medicine on account of the distress the effort of swallowing it brought on. As I entered the room she was thrown into a slight spasm, caused by the current produced by opening the door. Such attacks, I was told, occurred whenever, from any reason, she was surprised or disturbed, or the door was opened.

A constant accumulation of mucus in the throat, and an inability to get rid of it thoroughly, was a symptom that gave her much annoyance. She declared that though she made repeated efforts to expectorate it, yet some remained sticking to her throat. Success in raising it gave her much satisfaction, hoping thereby to obtain relief.

Her appearance this morning betrayed more anxiety, restlessness, and apprehension than on the previous day; but she was at no time boisterous or irritable. She could control herself in a measure, when quietly talked to, and, while in the house, always obeyed when told to do anything. I questioned her closely then, to learn if she had been bitten by a dog, cat, or other animal, but she persistently denied that she ever had, as did likewise the family. As she did not admit having been bitten, I determined to try once more if her fear of water was real. For this purpose Mrs. McC. and myself proceeded to assist her in rising up. As on the day before, she hesitated before attempting to rise; then, with a laboured effort, she sprang to a sitting posture. At the same time she spasmodically grasped our arms with considerable, almost painful force, and had a strong catch in her breathing, which lasted a few seconds, and required much effort to overcome. On ordering the water she immediately became anxious and troubled, and, with an expression of dread, begged

that we should not ask her to drink. Being pressed to overcome her aversion, and told that perhaps her fear was only imaginary, she consented to try, and the glass of water was brought. She looked at it, paused, then shuddered, turned her head away and said, "I can't; don't ask me." Mrs. McC. still further persuaded her, and she said, "I don't want to drink out of the glass; I'll drink some with the spoon." She then filled a tablespoon, and with hesitation carried it to her mouth, threw the water in, and made an attempt to swallow. Instantly her shoulders and thorax were elevated, breathing interrupted, inspiration catching, and she had a paroxysm similar to the one already described, only much more severe in character. I am of the opinion that the glottis was involved in this spasm. Interrogating her and the family yet more, I did not ascertain that she had received any injury. She had no trismus, no tension of the spinal muscles, and there were other marked distinctions between her symptoms and those of tetanus. She had no indication pointing to any disease of the brain or cervical vertebræ; was not subject to hysteria, nor would a theory of hysteria, even supposing her denial of having been bitten to be true, explain her symptoms. Moreover, it is well known that, contrary to the facts of the case, patients with rabies often deny having been bitten, and persist in such denial. There was no evidence of disease of the larynx or œsophagus, and the non-existence of any was subsequently proved (*vide autopsy*).

At a subsequent visit that morning, I noticed that she had marked *aërophobia*. Every current of air that blew on her brought on a paroxysm more or less severe. Even sudden motion in the room sufficed to induce a slight attack, and a mere touch with the hand was often all that was necessary to throw her into a transient spasm. These spasms came on at intervals, being induced by very trivial causes, and even without any appreciable one, and continued to increase very gradually in severity up to the time she was removed to the hospital. It had been intended that she should be sent to the hospital in the morning, but owing to delay in communicating with her relatives, their tardiness, and other obstacles thrown in the way, she did not arrive there till late in the afternoon.

I had no further connection with the case, and the remainder of the history will be furnished by my friend, Dr. J. E. Culver, who was on duty at the hospital on her arrival.

Subsequent History, with Remarks. By J. E. CULVER, M.D., Physician to St. Francis' Hospital, Jersey City.

Lizzie M., aged 18 years, was admitted into St. Francis Hospital, January 31, 1876, just as my term of service was expiring and I was about to leave the building. Waiting in the apothecary's room to enter her name on the Hospital Record, a window-shutter was opened to admit more light, whereupon she started suddenly, with a look of terror, and in a twinkling nearly all the voluntary muscles of the body participated in convulsive movements. A start, an instant holding of the breath, and a convulsion, followed the ringing of the door-bell. Several times currents of air blowing upon the face caused convulsions. As a convulsion subsided, one of the sisters approached the agitated patient, and with words of kindness, sympathy, and encouragement, besought her to dismiss her fears, and try to control herself. While speaking, the sister caressingly passed her arm around the girl's neck, and lightly patted her cheek to soothe and assure her. Like magic, at the first touch of her hand the

paroxysm recurred, although she strove bravely to resist it with all her might.

I observed that she swallowed saliva after each paroxysm, and that deglutition was normally performed, and did not excite a renewal of the paroxysm. It was evident that the spasms did not extend to the involuntary muscles of the œsophagus. Her senses were wonderfully acute, and this hyperæsthesia coexisted with an intense motor hyperæsthesia, such that impressions ordinarily inappreciable and unnoticed now called forth quick, and various, and motley, and uncontrollable struggles. Even in the intervals of the paroxysms she was morbidly unquiet, and her actions were ill-coördinated, hurried, and jerky. Keenly vigilant, anxiety and fatigue were legibly depicted in her countenance. She stated that she had not taken food or drink for more than 48 hours, and she was hungry and thirsty. By dint of extraordinary effort she could carry a glass of milk to her mouth steadily enough, but before it touched her lips the spasms always supervened and defeated her volitions. There were frequent muscle-tremblings, and sighings, and eructations. Her pulse was 118, regular; temperature estimated normal; respirations hurried, restricted in scope, and irregular, and even became arrested, confused, catching, or gasping, during the paroxysms. There was cyanosis enough to make apparent the venosity of the blood. The greatest force and duration of the spasms were expended on the respiratory muscles; and oftentimes those of expiration and inspiration were both at once rigid in a state of violent antagonism, baffling the vain struggles of the conscious girl for breath. From first to last the involuntary contractions sometimes affected more one group of muscles, and sometimes another, but in every paroxysm the respiratory muscles most of all.

The appearance of the patient indicated previous good health, intelligence, a gentle disposition, and easy manners. To my questions concerning her present illness, she gave chiefly negative replies. Especially she declared, that in all her life she had never been bitten by a dog nor by any other animal. She or her aunt, who came with her, volunteered to account for her sickness as having been brought on by sleeping in an atmosphere foul with gases which escaped from a coal-burning stove having a bad flue-draught. My friend, Dr. T. J. McLoughlin, who was present with me in the hospital, and by whose advice the patient applied for admission, kindly gave me the early history of the case as already related.

I could learn nothing concerning the etiology of the disease. Her symptoms corresponded accurately to the only case of hydrophobia which I had ever seen before; but, wanting proof of the dog bite, I concluded to stand non-committal, and (partly at the suggestion of Dr. McLoughlin) to write down the diagnosis *hysteria simulating hydrophobia*, with the understanding that, should the dog be discovered, the first two words should be erased. The conviction that the patient was soon to die of hydrophobia deeply impressed us however, even while we were determined to withhold a decision and await the light of further developments. For we could detect no other disease, whether local or affecting the general system, by the closest scrutiny of all the phenomena observed.

She could bear the use of the tongue-depressor while we inspected the fauces, without a spasm being provoked. We therefore suspected that the glottis or epiglottis was a focus of hyperæsthesia, a starting point of the convulsions which defeated deglutition, and immediately put this idea to

the crucial test by applying thoroughly to these parts a strong solution of silver nitrate. As soon as the strangling caused by the caustic had subsided, she took a goblet of milk in her own hand and drank it all. She promptly answered affirmatively when asked if she would have more milk, and drank a second gobletful, and then part of another. This was done not without repeated efforts, interrupted by waiting to get her breath, and once by a convulsion. She was ordered a tumblerful of milk every hour while awake; also, the following prescription, namely: R. Tr. valer. ammon. ʒj; hyoseyami, ʒij; assafœtidæ, ʒvj.—M. *Sig.*—*A teaspoonful every two hours in milk.* This might relieve hysteria—it could do no harm in hydrophobia so far advanced, for nothing known could at this stage avert a fatal termination. It might assist to extricate us from the ambiguous diagnosis.

This done, I left the hospital.

For the further history of the case I am chiefly indebted to the kindness of Dr. T. J. McLoughlin, who obtained the particulars from the sister in charge.

The patient was immediately put to bed in the large female ward. She remained very restless the whole evening, and, indeed, all night. There were continual sighings, and convulsions, and eructations of gases, but no sleep. She tossed about in bed so that it required an attendant to keep her from falling out. She protruded her tongue frequently as if to raise sputa, and vomited occasionally. She could not be prevailed on to take any drink whatever, except her medicine. She called repeatedly on those about her to close the door and stop draughts of air, because they took away her breath. Oftentimes she was delirious, calling aloud the names of absent relatives and others, and conversing with them. She disturbed the other patients, and had to be removed to a private room early on Tuesday morning. She had walked to the ward last evening, but now she could not stand; her legs seemed paralyzed, and dragged along the floor as she was carried. Ever and anon she complained that she could not breathe, tossed to and fro and threw herself about, seized hold of the bedstead, begged to be slapped and rubbed between the shoulders, and for the space of three hours suffered almost continual spasms, with very brief intermissions. She could now no longer be kept in bed, and her mattress was put on the floor. After severe paroxysms she frequently raised mouthfuls of foam, with some apparent relief. About 11 o'clock A. M. she became a little quieter, and continued so until 3 o'clock P. M., at which hour she took a good drink of wine. She had to-day previously swallowed nothing—neither food nor drink—except one teaspoonful of her medicine.

Soon afterwards I saw her again a moment in company with Dr. J. F. Finn, Visiting Physician to St. Francis Hospital. The surface of her body was cool and cyanotic. Pulse irregular, intermittent, and rapid, but indistinct at the wrist. A slow and feeble circulation. Respirations sighing, dyspnoic, and often interrupted by the spasms. Breath cool. Had vomited and had involuntary discharges. Convulsions continue. Semiconscious at times. Moribund. At 6½ o'clock P. M. she still raved incessantly, at times in a loud voice, and fancied that a girl standing by was throwing flour in her face. She leaned on her hands for support when breathing. A powder was administered to relax the spasms. Vomited. Convulsions continue. About 8 o'clock P. M. she extended her arms in jerky, rigid spasms, threw back her head, and died immediately.

It has since come to light that she had been bitten on her legs repeatedly by a dog presumably rabid, as stated in the previous case, see p. 80, but she had been enjoined not to mention this; and in the face of death she dared not divulge the secret even to save her own life, but preferred to utter a deliberate falsehood and take the risks.

The *post-mortem* examination was made by Drs. J. F. Finn, B. A. Watson, and myself, Wednesday, February 2d, at 11 o'clock A. M. The external appearances of the cadaver were those of one dying in full health. A shade of cyanosis still lingered, and there were two or three ecchymoses from bruises received in her struggles. The gross appearances of the brain and its membranes, the cerebellum, and the medulla oblongata and spinalis were normal. Sections of the medulla placed under the microscope revealed no disease-changes of structure. All the organs of the thoracic, abdominal, and pelvic cavity were examined, and the only pathological conditions found were, namely:—

1. A single minute patch of necrotic tissue was seen on the serous surface of the duodenum.

2. The coats of the intestines were injected pretty extensively, and presented pinkish striæ.

3. The arteries were empty, the veins everywhere were comparatively full, but not much engorged. The blood, partly in coagula, was black. Colour of muscles darkish.

The diagnosis of hydrophobia is difficult, and even its existence has from time to time been denied. Medical scientists have recognized and studied it in every age since the great medical school at Alexandria was established; but still it challenges investigation, for to-day it has no pathognomonic symptoms, no characteristic morbid anatomy, and no successful treatment.

Abstinence from food and drink is one of the earliest symptoms of hydrophobia noticed in man, and undoubtedly it obtains to some degree for a few days before it is discovered. Disordered digestion attends every case of this disease in man and in animals. In Lizzie M.'s case there were constant eructations from first to last. The gases belched forth could have their source in nothing else than septic decomposition of the contents of the alimentary canal. Putrefaction of albuminoid compounds always evolves hydrogen carbide, sulphide, and phosphide, irritant poisons—which at first produce a burning sensation in the stomach and œsophagus, but ultimately deeper irritations, striations, discoloured patches, and erosions of the mucous membranes. Such lesions of the alimentary canal, especially of the small intestines, are among the most constant found in bodies dead of hydrophobia: they may vary in extent and intensity according to the quantity and quality of the matters contained in the intestines and the rapidity of decomposition. Perhaps we could avert these sufferings and dangers by a very early unloading of the bowels. One or more doses of castor oil, and enemata containing some safe antiseptic, would probably effect the object. The patient could then be nourished with liberal draughts of lactic-acid-wine-whey—adding to each ounce of the wine used in making it 3ss to ʒij of lactic acid. Lactic acid is an efficient antiseptic, and lactates are always present in healthy blood.

The hyperæsthesia, motor and sensorial, and the convulsions, were certainly not of centric origin in Lizzie M., any more than are the death-struggles of animals bleeding from severed jugulars. They were the con-

comitants of a failing circulation, imperfect aeration of the blood, a lack of equable innervation, a calorification, and evaporation ill-balanced. The temperature was probably reduced. The theory of a peripheral origin of both the hyperæsthesia and the convulsions may appear plausible to one who concedes due importance in the causation of involuntary contractions of voluntary muscles to the erethism of irritability which comes of incessant burning pain in the œsophagus, stomach, and intestines, the stress of impending suffocation and want of arterialization of the blood, the inability to satisfy a famishing hunger and thirst, and the racking pain which attends perpetual overwork and extreme exhaustion, without the possibility of a moment of rest—tortures, mental and bodily, which always augment until the conscious sufferer is thereby put to death. The convulsions were clonic. The final outstretching of the arms appeared tetanoid, as did also at times the contractions of the chest-muscles. But the spasms did not involve the involuntary muscles. The heart was not found in preternatural systole after death, neither was there any such contraction of the small intestines as occurs in tetanus and in some cases of tubercular meningitis.

The comfort of the patient demands occlusion of light by blindfolding or otherwise, all annoyances by touch or sound should be avoided; the temperature of the room should be uniform, and nearly that of the body; the atmosphere should be highly charged with moisture to retard evaporation.

The comparative emptiness of the bloodvessels, and the venosity and inspissation of the blood seen after death, are but the inevitable consequences of the early refusal of liquids, and the subsequent inability to swallow them; besides the unremitting muscular exertions accelerate evaporation, both pulmonary and cutaneous. Herein lies imminent danger to life, which can only be met promptly by injecting into the veins, at suitable intervals of time, and in quantities sufficient to refill the bloodvessels, water at 100° Fahrenheit—perhaps holding in solution, ammonia, chloride of sodium, and soda lactate or carbonate, slightly in excess of the proportions in which they are contained in healthy blood. With a hint from the experience of Magendie we must close. This physiologist, knowing the influence of largely substituting water for blood in the circulating system, tried the experiment in a mad dog which was in a furious state, and which instantly became tranquil, and so continued for five hours. Again, he injected one pint of water at 100° Fah. into the vein of a man's arm; directly the patient, from being highly rabid, became tranquil, the pulse fell from 150 to 80 in a minute, the convulsive motions ceased, he drank water without difficulty, and continued to improve till the fifth day. In another case, death followed as in this; but at the moment of the experiment, there was a great and sudden change for the better. The patient lived eight days after the injection, and died, possibly from another complaint.

ART. XIV.—*Report on Eighty Cases of Chorea.* By GEORGE S. GERHARD, M.D., Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases, and Assistant Physician to the Children's Hospital, Philadelphia.

IN the *Philadelphia Medical Times* of January 3, 1874, I published a digest of thirty cases of chorea, which was of interest not only on account of its having been the first of the kind ever made on this side of the Atlantic, but also as showing certain peculiarities manifested by the disease as it occurs in this country. Since then forty additional cases have been reported in the same journal for March 27, 1875, by Dr. Chas. K. Mills.

The present collection embraces fifty new cases, to which, for more extended study, I shall add those previously reported. The majority of the cases were obtained as before from the case-books of the Infirmary for Nervous Diseases; the remainder were under Dr. Weir Mitchell's private care, the notes of which he kindly gave me, or were seen by me during my terms of service at the Children's Hospital.

In studying the eighty cases in regard to the *age* and *sex* of the patients, I find that there were—

Under 10 years of age	28 cases	9 males	19 females
From 10 to 21 "	52 "	18 "	34 "
Total	80 "	27 "	53 "

The preponderance of the females over the males shown by this summary agrees with the usual clinical experience, and may be explained by the greater liability of the former to disturbance of a nervous kind, and to their greater susceptibility, particularly during the age of puberty, represented by the second period of the foregoing table, to one of the great exciting causes of chorea, viz., fright.

Side affected.—In twenty-seven cases the choreic movements were found to be general; in eleven to be general, but chiefly marked upon the right side, and in ten to be general, but better pronounced upon the left side. In thirty-two cases the affection was absolutely unilateral, being confined in twenty instances to the right side, and in twelve to the left.

The reports on chorea published at different times have varied greatly in regard to this point, but I am inclined to think that the more modern statistical accounts all point to the right side of the body as being the side especially liable to be affected. The present table agrees with the opinions expressed by such high authorities as Drs. Hughlings Jackson and James Russell, and it also coincides with the results obtained by me in 1874; but it is directly opposed to the statements of a number of French writers, among whom may be mentioned Rufz, Trousseau, and Sée.

A certain number of cases of chorea beginning unilaterally ultimately become bilateral; but by far the greater number remain so throughout the course of the attack. Another, though a very rare result, is the passage of the disorderly movements from one side of the body to the other; thus, for instance, converting a right-sided chorea into one of the left side.

In regard to the alleged *cause* of the disease, in twenty-two cases out of the whole number none was discovered. In eleven cases it was attributed to fright; to rheumatism without heart disease in eleven cases; to rheumatism with heart disease in seven cases; to heart disease alone in six cases, and in three cases, though no actual exciting cause was found, to a strong hereditary predisposition to chorea.

Out of the twenty remaining cases the disease was ascribed to violent pain in seven instances, and to mental worry and miscellaneous troubles in thirteen.

The relation between chorea and rheumatism, or the rheumatic diathesis, and valvular disease of the heart has given rise to much discussion, and to the advancement of many theories. Dr. Mitchell has frequently at his clinics expressed the opinion that chorea and the rheumatism of childhood are of kindred parentage; in other words, the former is simply another expression of the causes which give rise to the latter, and though he does not deny that the disease is sometimes intimately related to heart disease through embolism, he still believes that the majority of the cases are not at all connected with such a pathological condition. A seemingly strong objection to this view is, that in most of the fatal cases where examinations have been made, vegetations have been found upon the valves of the heart. But in opposition to this it may be urged that possibly the cases associated with vegetations are the ones most likely to end fatally.

The doctrine of embolism as a cause of chorea was first announced by Kirkes, who held that whenever an association between chorea and rheumatism was found to exist, there had been an inflammation of the valves of the heart, and the association was not between chorea and rheumatism, but between chorea and valvular disease of the heart. That is to say, that vegetations formed upon the valves as a result of inflammation, and becoming detached, were washed into the general circulation, causing an irritation of the nerve centres. Dr. Kirkes did not attempt to localize the seat of the lesion, as has since been done by Dr. Hughlings Jackson, who, accepting the theory of embolism, maintains that it is the nerve tissue about the corpus striatum which is rendered unstable by plugging of the smaller branches of the middle cerebral artery. Dr. Jackson also insists upon a distinction being made between instability of nerve tissue and destruction of function; the result of the former being disorderly movements, and of the latter paralysis. This really places chorea on the

border-land of paralysis, and the frequent mingling of both conditions unquestionably gives much support to the view.

Season of Year.—In my first paper, I stated that Dr. Mitchell had called attention to the fact that chorea, as it occurs in Philadelphia at least, is much more prevalent in the spring than at other seasons, and the analysis I made forcibly proved the correctness of the observation. Out of the eighty cases which form the basis of the present paper, the attacks occurred in the spring in thirty-nine instances; summer, ten; autumn, seven; winter, twelve; total, sixty-eight. In the twelve remaining cases the point is not mentioned. Thus it will be seen that more than half of the cases in which the point was noted occurred in the spring. It is difficult to offer any explanation for this remarkable preference, unless, as I before suggested, it is due to the enervating weather of the season in question. We all suffer more or less from constitutional depression in the spring, particularly in the early part; indeed the so-called "spring fever" has become with us an almost recognized disorder. I am not aware of any mention having been made of the point as it occurs in connection with chorea in other parts of our country. In Paris, however, according to M. Sée, the disease is most apt to occur in the autumn, the season which, I think, very closely resembles the spring of Philadelphia in point of temperature and tendency to cause enervation. The disposition of chorea to recur in the spring may also be shown. Thus, out of eighty cases previous attacks were noted in twenty-five, and all but seven of these occurred in the spring. Of the twenty-five cases, fourteen had had one previous attack, eight had had two, and in three instances the patients had suffered from three

The presence of *partial paralysis* was noted in seventeen cases, the loss of power being confined in ten instances to the right side, and to the left in seven. The frequent occurrence of "choreic hemiplegia" is, as I have already said, a strong argument in favour of the view held by Dr. Jackson in regard to the seat of the lesion of the disease, viz., the convolutions about the corpus striatum.

In this connection I shall call attention to remarks made by Dr. Mitchell at his clinics in regard to the motor manifestations of certain choreas. For several years he has pointed out the existence of peculiarities in these manifestations which may be summed up as follows: Usually choreas begin with the exhibition of mere awkwardness of habitual voluntary acts, and this increases until there is also added a new set of movements which in grave cases at last predominate. These are spontaneous meaningless motions, such as we all well know as choreic. In a certain number of the usual vernal cases, as well as in most of the post-paralytic choreas described by Dr. Mitchell, the second group of motor manifestations does not exist at all, or is seen in a minimum amount. That is to say, there is no disorderly movement except during an act of volition, when the amount of disturb-

ance varies. In other words, as in some sclerosis the hand when not in willed motion is quiet, but when moved by will trembles. So in these choreas, there may be no spasmodic acts until volitional motions are attempted, when these latter become at once irregular and inco-ordinate.

A third group is also to be found, but it is a smaller one. It is made up of children, who never have very severe chorea, but in whom it is constant and automatic, but ceases whenever a distinct purposive movement is made. Just as in paralysis agitans in its early stage, the tremor vanishes during a volitional movement, to recur when the part comes to a state of passive rest. As might be expected, the two last varieties of chorea are mixed together, so to speak, in variable proportions to form the first and more common class, but not rarely we meet with type cases of the other forms.

Dr. Mitchell has also noticed now and then at his clinics, and more often in private practice, cases of what may be called *painful chorea*. They are unilateral nearly always, and are accompanied with dull aches in the muscles and about the joints. He has never seen in them a distinct unilateral outbreak of joint rheumatism, but still thinks that there is some reason to regard the pains as of rheumatic parentage. Dr. Mitchell has of late had reason to think that some cases of chorea are like the traumatic neuralgias, and certain examples of arthritis liable to be unfavourably affected by the atmospheric changes which herald a storm.

The *treatment* of most of the cases consisted in the administration of arsenic in increasing doses. Beginning with a few drops of Fowler's solution three times a day, it is our custom to increase the quantity by the addition of a drop to each dose on alternate days until a toxic impression is produced. When this occurs the dose is reduced to a few drops and again increased as before. In the more obstinate cases, many of which had resisted all other forms of treatment, the arsenic was pushed to its full toxic limit, that is, until decided puffiness of the face and gastro-intestinal irritation were produced. Fowler's solution was also in a few instances given hypodermically and with excellent results. The only advantage to be derived from this mode of administration is the lessening of the tendency of the drug to cause gastric disturbance—a complication which occasionally becomes an early obstacle to the treatment. We have also found that a much smaller and a less frequently administered dose is required to bring about the desired result of controlling the choreic movements.

Zinc in the form of sulphate was also employed in a number of cases, and with a result almost as good as that following the use of arsenic. Other remedies employed were bromide of iron, gelsemium, eserina, cimicifuga, and bromide of potassium, but of these the bromide of iron was found to be the most efficient. Arsenic, however, is the drug in which we place most reliance. Dr. Mitchell indeed, believing, as I have already

stated, that chorea and the rheumatism of childhood are of kindred parentage, has of late been using in rheumatism of the young full doses of arsenic, and even arsenic hypodermically. The results have been promising enough to justify the testing of this means by a larger experience. The rheumatic cases have been given arsenic up to the toxic limit, and until the face became swollen.

The results of treatment of the eighty cases were as follows: Cure in 56 cases; improvement or unknown in 24 cases.

All who have had experience in dispensary practice are aware that many cases fail to return to make a final report, and consequently the results cannot be positively stated. In the present instance, knowing that chorea when properly treated is a very curable disease, it is fair to assume that the majority of the cases marked "improvement or unknown" ultimately recovered.

ART. XV.—*Fibromata of the Skin.* (Fibroma Molluscum, cutis pendula, "Fibro-cellular Tumours.") By DE SAUSSURE FORD, A.M., M.D., Professor of Descriptive and Surgical Anatomy in the Medical College of Georgia (Augusta), Medical Department, University of Georgia. (With a wood-cut.)

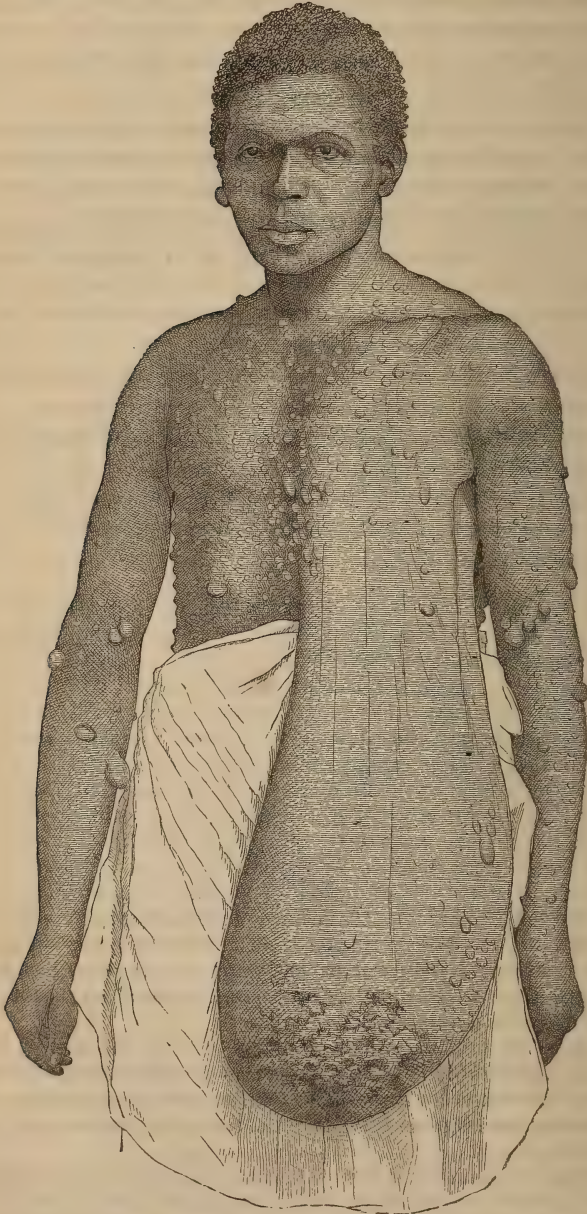
JOHN T——, negro, æt. 37, of Scriven County, Ga., was sent to the Faculty of the Medical College of Georgia for treatment, by Mr. Scroven, an undergraduate, who writes thus: "At his birth, John T. represents that he was covered with tumours, varying in size from that of a mustard-seed to that of a partridge-egg. For about twenty years his health was good, though the tumours increased as he grew in size. In the succeeding ten years, they increased very rapidly in size, the one attached to the left mammary region attaining the dimensions of 12 inches in length, and 9 inches in circumference, the smaller ones ceasing to grow, but the large one continued its growth until last spring (1875), when it began to increase more rapidly, measuring 24 inches in length and 36 inches in circumference. He then had an attack of severe remittent fever, attended with sharp lancinating pains in the pedicle of the tumour at its attachment to the left mamma. After brisk purgation it decreased one-third in size, and the free use of quinia controlled the remittent, the pain ceasing as the tumour decreased. Remittent attacks recurred three times, but yielded to same treatment as in first attack."

In the presence of the medical students of the Medical College of Georgia, on November 1, 1875, after ether was administered, I proceeded to extirpate the large tumour, pendent from the left mammary region, which then weighed 18 pounds, was 25 inches in length, and 28 inches in circumference.

The écraseur was used, but the instrument breaking, on account of the dense fibrous pedicle, which nature had provided to suspend the enormous mass, being too unyielding, the operation was completed with the scalpel.

Three vessels were ligated, and the wound closed with silk sutures. Union was secured in ten days, when the patient was dismissed, and, from last accounts, was well, and ploughing daily.

Finding it necessary to abandon the *écraseur*, before making the incision



through the pedicle and what other tissues had not been constricted, I directed an assistant to apply, above the pedicle, the rubber tubing of Esmarch's bandage, so as to arrest the circulation through the branches of the axillary artery, distributed to this part of the body, as having found it most serviceable, upon a previous occasion, in extirpating a large fibro-cystic tumour of the mamma.

After the operation the smaller tumours were carefully counted, by dividing the surface of the body and extremities into sections, and they numbered sixteen hundred. A part of the large tumour, and a part of a smaller one which was snipped off with scissors, were submitted to George W. Rains, Professor of Chemistry in the Medical College of Georgia, for microscopical examination. He reports both specimens as composed of a mass of nucleated cells and fibrous tissue, with nucleoli measuring $\frac{1}{10000}$ of an inch, and nuclei $\frac{1}{4000}$ of an inch in diameter.

The photographer, by mistake, failed to strip the patient of all clothing, and thereby failed to represent the tumours on the inferior extremities, and especially a large one upon the outer side of the right thigh, which is not pedicellated, and involves a considerable extent of skin and subjacent tissues.

I respectfully refer the readers of this Journal to Dr. Edward Wiggleworth's article upon Fibromata, in the *Archives of Dermatology*, April, 1876, for more full information of the pathology and history of these remarkable growths.

AUGUSTA, GA., May 1, 1876.

ART. XVI.—*An unusual case of Cancer of Breast, with Tissue Infiltration and Cachexia; Child-birth and Post-partum Hemorrhage; Retrogression of Disease and apparent Restoration to Health for more than two years; Excision of Mamma owing to Renewal of Disease; Subsequent Appearance of Cancerous Nodules in the Skin; Death after two more years of slow decline, accompanied by some symptoms pointing to Intracranial Disease; Autopsy; Remarks.* By JAMES S. GREENE, M.D. Harv., of Boston (Dorchester), Mass.

THE patient whose case is here recorded first came under my observation in the summer of 1870. She was then forty-five years of age, married, and the mother of five healthy children. All her brothers and sisters, four in number, were living and well; as likewise her mother. Her father died of acute pulmonary trouble at the age of seventy-six. All the ancestors, as far back as to include the great-grandparents, lived to advanced age, and showed no taint of cancer or other hereditary disease; and the only instances of cancer known in collateral branches are a mother's cousin, upwards of seventy, and a maternal cousin still further removed, dying at eighty, both of reputed scirrhus.

This lady was above the middle stature of her sex, of good figure and erect carriage, having a fair complexion and light-brown hair. Born in Massachusetts, her life had been passed in her native State, excepting

some later years in California, where she had intermittent fever. Her health otherwise had been excellent. She was prevented from nursing her eldest child by the occurrence of inflammatory trouble of the left breast; with her other children lactation was normal.

About the end of April, 1870, she became pregnant with her sixth child. In June she revealed the fact, concealed for some unknown length of time, that she had a disease of the left breast.

Having arrived at Boston from California, July 5th, she consulted Dr. Henry J. Bigelow, who now distinctly remembers and describes her disease as "a thorough-going cancer of the breast, in active progress and highly vascular."

He advised non-interference, except with means for relief of pain, until after recovery from the expected confinement, and his advice was followed.

February 4, 1871, after a labour of two hours' duration, she gave birth to a healthy female child weighing ten and a half pounds. Flooding *ad deliquium* followed, though the uterus was prevented from relaxation by a firm grasp over the fundus, maintained from the moment of the expulsion of the child until the danger was past. The pulse was almost, and part of the time quite, imperceptible for two hours and more; but, by prompt and diligent efforts, restoration was finally secured.

There was no attempt at lacteal secretion in the diseased breast. Strength returned very slowly, and it was not until the latter part of May that she a second time visited Dr. Bigelow, and renewed the question of surgical interference. He found the tissues near the breast so implicated in the disease that he again, and finally, advised against an operation.

Her condition at the end of May was as follows: Dull eyes, a haggard countenance, paleness and sallowness of complexion, and weakness were marked symptoms, chargeable in part to the progress of organic disease, in part to anæmia resulting from the post-partum hemorrhage; while the vascularity of the local disease had probably lessened since child-birth. The left breast was hard and firmly adherent to the pectoral muscle, and was crossed by a horizontal furrow, into which the nipple was deeply drawn. This sulcus was filled with a scab, moistened by a slight, excoiating discharge, and the surrounding skin was bright-red for the space of a few lines. The left clavicle had a central point of extreme tenderness to touch, and above and below it the tissues were tense, indurated, and painful. There was also some thickening of the tissues near the right clavicle. Some glands in the left axilla were enlarged and tender; left hand was puffy and somewhat livid. Movement of the arm greatly restricted and painful; not more than three or four inches space between elbow and side could be tolerated in adduction, and rotation was almost wholly prevented.

Just at this time cundurango bark was first advertised to possess specific virtues against cancer.

The patient went to Washington, where she remained about six weeks, taking the bark under the direction of Dr. Bliss. The supply, scanty from the beginning, and doled out in the most frugal manner, then became exhausted; and, July 10th, with a certain improvement in condition, she returned to Massachusetts, there to await a new invoice of the alleged cancer specific. This was received, and its use resumed about the end of the same month. She then used, in addition to a decoction of *3ij* of the bark daily, a tincture made by percolation of the residue with alcohol.

August 8, ten days after she resumed the use of the drug, an opportunity was granted me to examine the breast. Its redness had disappeared, so had some of its former hardness; it was movable on the underlying muscles. Manipulation did not elicit pain nor tenderness. The horizontal sulcus which included the nipple appeared to be less tightly drawn. That portion of the scab which had filled the inner half of it, having become loosened, had been removed by the nurse and had not been reformed. There appeared to be a letting out of a margin of skin which had been drawn into the furrow. There was a spot on the left clavicle still a little tender to pressure; and the infiltration of the adjacent tissues, though less marked than before, was noticeable. There were no longer any tender or enlarged glands in the axilla. The puffy, livid appearance of the left hand, remarked only a few days previously, was wholly gone, and the arm had regained considerable freedom of motion.

August 16, a further "letting out" of the skin from the sulcus in the breast had become very perceptible, and the range of movement of the arm was daily increasing. There had been a slight menstrual flow two or three times, at irregular intervals, and I think the final cessation of the catamenia took place about the last of August.

The history of the next two years of her life may be condensed into a few sentences. She rapidly reached, and maintained during most of that period, a condition of thoroughly good health; having early lost all outward signs or symptoms of disease. Complexion, eye, and movement all betokened health and strength, and in 1872 she weighed more than ever before. Coincidentally all local infiltration of tissue disappeared. The arm regained its entire mobility and freedom from lameness, if not its full strength.

The process of absorption of morbid deposits did not reach its full completion in the breast itself, for the nipple continued to be in some degree retracted. The shallow groove around it became free from any unwholesome secretion, and the gland, though harder than normal, was without tenderness.

During this period she was taking liberally of *cundurango*, under the direction of Dr. Bliss. Sometimes its use was suspended for awhile, but, allowing for these intervals, she probably took it in full doses at least two-thirds of the time.

In the later months of the period now under notice, while her general condition remained good, and she ate and slept well, there was nevertheless a perceptible lowering from the standard of thorough good health. During some of these weeks she would be rather nervous, and would feel fretted because she had not her usual executive ability. All this time her residence was in Massachusetts, though visits of a few weeks were made both in California and at Washington.

In September, 1873, the family removed to Washington, and I did not see the patient until the following April. I learn that she began, as early as October, to be apprehensive of a renewal of the disease in the breast; but she only took her medicine the more diligently, and said nothing. It was not until February, 1874, that her husband became aware of the recurrence of local symptoms; and Dr. Bliss, being consulted, advised, and soon afterwards performed, the operation of excision of the mamma.

The wound healed well, but the patient was still weak from the effects of the operation, when required to undergo the fatigue, anxiety, and responsibility attending the illness and death of her mother. This involved a

journey to the north early in March, a return journey with the sick woman the beginning of April, devoted attendance for rather more than two weeks longer, and a second journey to Massachusetts with the remains for interment. To this period, immediately succeeding the surgical operation, are referred the slighter beginnings of a new class of symptoms, traceable to the nerves and to the nerve centres, pointing to a stealthy, hidden influence, harassing, weakening, and finally destroying the powers of life near their source.

The increasing feebleness, which I could not fail to notice on the occasion of the above-mentioned visits, was attributed by her friends to fatigue and anxiety. It has since been said that she never seemed to recover from the shock of the surgical operation. Periods of languor, pallor, indisposition to move occurred, and increased in frequency. Rigors came at irregular intervals, suggesting the revival of former malarial influences. Pain, both of fixed and darting character, in back and limbs, became troublesome. This was called rheumatism, or sometimes neuralgia. Her husband, ever devoted and full of resource, maintained that she was overcome by the heat of Washington latitude; and, July 1st, brought her north to Massachusetts, where she remained for six or seven weeks, always bravely resisting the progress of enfeeblement.

August 18th she was taken by her husband overland to California, where, almost as soon as she arrived, she succumbed to nervous prostration. This illness proved serious and prolonged. It was called malarial fever, from the frequent occurrence of chills; there being a settled policy never to admit the possibility of a return of cancerous cachexia. Indeed, cundurango was held to be the restorer and preserver of her life, and was still used largely. These nervous chills were frequent and prolonged; a sip of water would often induce one. Another persistent and perplexing symptom was a quick, feeble, very irregular, and intermittent pulse. Quinia, to the extent of twenty grains daily, was used, with good effect on the pulse.

I do not learn that much fever was present, but do not suppose that any thermometric observations were made. There was *no headache*, and the patient's own mental operations were as clear and rapid as ever; but she began to require that any one who addressed or read to her should *speak slowly*. At other times she could tolerate no talking near her. In the middle of December, four months after leaving the Atlantic coast, she had rallied sufficiently to venture upon a return. The journey, made with every modern appliance for a sick person's ease, and with attentive nursing, did not cause exhaustion nor apparent strain of such of her powers as remained; but on her arrival at Washington, every attempt at resuming the least part in social or home affairs resulted in most discouraging prostration, attended by pallor and disinclination to move. Talking in her presence would then be distressful. She no longer had chills.

Through that winter, and until the succeeding summer of 1875, she remained at Washington, and this unequal, but still courageous contest continued against the lurking, concealed disease. One letter would inform us of her sitting up to receive visitors, or even driving out to Arlington Heights; the next would describe her in a state of prostration seemingly but little less than collapse.

She came to Massachusetts, her last journey, the first of July, 1875. The trip seemed to exhaust the last particle of physical energy. In one or two drives that she attempted after her arrival, the pallor, the dull,

glassy eye, the expressionless countenance, gave her almost the aspect of a corpse sitting and moving ; nevertheless nearly six months of existence still remained.

My attention was called to the presence, on the integument of the head and back, in the flexure of the thigh, and in the line of the cicatrix on the breast, of several painless nodules, probably twenty or more in number. In shape and size they were like fully-developed vaccine vesicles, umbilicated, without areolæ, and, in colour, like the surrounding skin. They had begun to appear several months previously, and did not increase in number nor change in appearance during the remainder of life ; but some of them, pressed upon as she lay, finally became very painful. At one or two points along the scar on the breast there was a slight scarlet blush, and this also henceforward remained stationary. Not only the cicatrix, but the whole surrounding skin over the space formerly covered by the mamma, was firmly fixed to the chest walls ; and this region was the seat of a good deal of pain. Soon, however, pain of a much severer and more persistent character attacked the right side, beneath the lower ribs ; and when this ceased, after about a month, there remained lasting numbness of the same parts. About the same period there occurred hyperæsthesia of the skin and mucous membrane of the cheek and lips on the left side, and of the surface of the chin ; and this becoming persistent, though unattended by any marked appearance of motor paralysis, nevertheless prevented mastication, and limited the patient during the remainder of life to liquid diet. There was also incipient palsy of the left upper eyelid ; and by the middle of August this had slowly developed into complete ptosis, with divergent strabismus of the same side, and she spoke of seeing objects double. During this time her rapidly failing strength compelled the relinquishment of all effort. She ceased to ride, to sit up, to recline in a hammock. The slightest muscular effort was usually attended by pain somewhere, and followed by exhaustion. Remaining almost motionless in bed, sounds, even the slightest, became intolerable. All noises, even to the rustle of a dress, were abolished in the house. Nevertheless, in her quieter moments, she read with her one useful eye, and wrote cheerful letters to her husband, then unavoidably in California, concealing from him all unfavourable tendencies and symptoms. These became so threatening, however, that, in the middle of August, I sent a telegraphic message advising his immediate return. She, ignorant of this, sent the same day a brave letter, while the effort of writing cost her some days of great pain in the back, shoulders, and neck, keeping her for the time almost motionless. The pulse at this period was once more irregular, intermittent, and weak. A little later, under the use of quinia, it regained considerable steadiness. The distressing hypersensitiveness of hearing gradually ceased during September ; and, about two months before death, it was accidentally discovered that there was deafness of the right ear.

Among the symptoms always noticeably absent were irritable stomach and headache. During the last weeks there were times when her head "felt dreadfully"—she could not describe it, but it must be bathed or stroked or combed *very* carefully, avoiding the nodules, and she must not be troubled with words. She partook liberally of a variety of liquid nourishment until the last hours of life, but during the last few days the sense of taste was manifestly lost. She usually had considerable sleep at night, and some by day. Decubitus was wholly on the back ; she could move her limbs, but had no power over the trunk. Passive motion of the

upper part of the body was very distressing, and for days together the slightest attempt at changing its position inflicted torture. Constipation, and the occasional resulting necessity of relieving the rectum of its accumulated contents, became a source of serious suffering and exhaustion.

The tendency to remission and exacerbation was traceable throughout, so that while the tide of disease constantly encroached upon the powers of life, it did so by successive wave-like advances and recessions. Thus, as in Washington months before, brief intervals of activity came between periods of prostration, so, now, days of comparative comfort intervened to relieve the distressful soreness of body. At times her tongue, commonly deep red and covered with a thick white coat, gradually became, and for a short time remained, clean and normal in colour. Towards the close, short times of such exhaustion came that life often seemed nearly pushed from its foothold in the body; then rallied and made a feeble stand.

I do not attribute this trait to malarial influence, for I do not know that it was more noticeable than in many cases of prolonged disease where the circumstances exclude suspicion of such agency. Indeed, this tendency to periodicity, seen everywhere throughout nature, was, perhaps, especially conspicuous here owing to the level steadiness and undeviating onward progress of the current of disease, permitting a view of each undulation in its course.

In the last days of life the power of articulate speech had become so far withdrawn, partly through weakness, partly from actual palsy, that she uttered only a few words very indistinctly.

Death came the 16th of December, 1875, from no other apparent proximate cause than asthenia. The power of voluntary motion gone, slowly the vagus nerve seemed to yield its function. The conscious mind probably maintained its seat almost to the end.

It will be seen from the foregoing record that the duration of her disease, allowing for the probable time when she was withholding the knowledge of it, was not much less than six years.

More than four and a half years of life remained after the opinion was given by the highest surgical authority that the disease had already too far contaminated her system to warrant an attempt at relief by the knife.

Following this expression of opinion, began rapid retrogression of the disease and recovery of health, fairly maintained for nearly two years and a half. Then came local relapse, culminating in excision of the mamma and complete removal of all external evidence of disease; and finally, thereafter, something less than two years of slow decay preceding the fatal issue. Her age at death was fifty years and nine months.

The day following death I availed myself of permission gained to make a preliminary examination of the contents of the thorax and abdomen.

On the whole left front of the thorax the skin was tightly adherent to the ribs and intercostal muscles. The left lung was free from disease, but contained no air, being compressed by a collection of from two to three pints of clear serum. From the base of the lung extended a narrow, very strong fibrous band to the costal pleura. The right pleural cavity contained a half pint of serum. The spleen was somewhat enlarged. All the other parts appeared healthy.

Five days later, leave was granted to examine the brain; and an autopsy was carefully performed by Dr. R. H. FITZ, Pathologist of the Massachusetts General Hospital, who has kindly furnished me with his minutes, as follows:—

"*Autopsy.*—Six days after death. Body exceedingly well preserved, much emaciated. A cicatrix, resulting from the removal of the left breast, in the vicinity of which, as well as elsewhere in the skin of the thorax, abdomen, and head, were several dense, flattened, rounded, somewhat elevated cancerous nodules, often umbilicated.

"The pericranium was infiltrated with the new formation as dense, gray slightly translucent patches. Calvaria thick and heavy from condensation of the diploetic portion. Dura mater unusually adherent; its periosteal surface presented diffused, slightly elevated patches of new formation. The inner surface of the dura, especially on the right side, in the frontal and parietal regions, studded with dense, gray nodules and patches, in parts confluent, the largest three-fourths of an inch in diameter and one-fourth of an inch in thickness, to many of which the pia mater was intimately adherent. Between and sometimes upon these growths the dura presented a delicate, thin, vascularized false membrane, containing numerous small points of hemorrhage. The vessels of the pia mater, injected; over the pons Varolii, anteriorly, slightly thickened and opaque. The brain in general apparently normal; the ventricles not dilated.

"The third pair of cranial nerves on the left, just before passing under the clinoid process, became suddenly of nearly twice the ordinary thickness, gray, dense, homogeneous, thus extending along the wall of the cavernous sinus.

"A nodule of new formation, as large as a pea, was found in intimate relation with the fifth nerve as it entered the right Gasserian ganglion. The motor root of this nerve was outspread upon the nodule. The thoracic organs presented no evidence of disease; the pleural surfaces apparently healthy. Spleen moderately enlarged, dark, and firm. Nothing abnormal found in the abdominal cavity.

"The structure of the nodules in the dura mater and skin was composed of a dense, fibrous stroma inclosing alveolar spaces, round, oval, and elongated, in which were groups of large, irregularly polygonal cells, but little degenerated and with large nuclei. There was no evident intercellular substance. Their arrangement at times was that of anastomosing bands.

"*Diagnosis.*—Cancerous meningitis and neuritis, with hemorrhagic pachymeningitis.

"With regard to symptoms, the examination explains only in part. The affection of the muscles of the left eye is apparent. The alterations united with the right fifth should be rather neuralgic, motor of the masticatory muscles, with possibly some affection of taste through the lingual nerve.

"The hemorrhagic inflammation of the dura—the *pachymeningitis interna* of Virchow—might explain a good many mental peculiarities, to say nothing of subjective and objective phenomena. The left-sided facial paralysis below the eye was not explained anatomically."

Among the many points of interest in the foregoing history, the signal retrogression of the far-advanced disease is especially prominent and noteworthy.

Velpeau emphatically denies the possibility of such an occurrence.

"Une fois né, on ne voit point le cancer rétrograder absolument; si la tumeur diminue parfois sur un point, c'est qu'il s'en forme ailleurs ou que l'économie s'infecte. Il n'y a pas plus lieu d'espérer la disparition spontanée d'un cancer quand il est petit, du volume d'une tête d'épingle par exemple, qu'à partir du moment où il égale le volume du poing ou de la tête." (*Traité des Maladies du Sein*, Paris, 1858, p. 513.)

He admits, in scirrhus, one seeming exception, namely, the atrophic variety, so called; but avers, in opposition to Virchow, that even this form is as steadily progressive in its way as any other.

This atrophic scirrhus, however, has no analogue nor illustration in the case I have detailed, which, as we have seen, is an instance of retrogression

not merely of the tumour, but of all visible signs and symptoms of disease, both in the tissues surrounding the tumour and in the general economy; and, as such, remains among recorded cases a very rare, and, perhaps, entirely unique one.

Is it possible satisfactorily to account for the phenomenon of retrogression as here displayed?

Dr. Bigelow emphasizes the consideration that the juiciest period of the disease was coincident with pregnancy, when the mamma was in its highest state of functional activity; and his comment, I suppose, would be that the most favourable time for a pause in the progress of malignant disease is when local physiological activity has just ended. It is even further not unlikely that a physiological retrogression of the functionally enlarged breast might be associated with the retrogression of a neoplasm in such breast.

Secondly, it is possible that not only the physiological crisis, but the appalling puerperal accident attending it, proved ultimately an advantage. If the patient had constitutional power enough to rally with any vigour from such a shock and loss of vital fluid, the repair would naturally be less obstructed, and the healthful efforts would gain better ascendancy after the veins had been drained of the mass of blood which must, at that stage and condition of the disease, have been loaded with morbid material.

Next, these physiological conditions were reinforced by psychological ones of no little power. This patient had a vigorous constitution and a strong will. She had also a susceptible mind and an impressible nervous organization. One possessing such a temperament would droop rapidly when faced by the horrible spectre of *cancer*, and assured that hope must be left behind; and under such circumstances the disease would advance with redoubled swiftness; but aided by the same temperament, the forces of life would grandly reassert their influence, if hope were substituted for despair by the assurance of rescue by means of an unlooked-for, and, until then, unknown antidote.

Cundurango bark was just then introduced through the channel of the State Department at Washington, and extraordinary specific powers against malignant disease were claimed for it. The husband of my patient, standing near this official source of the meagre information then received concerning the alleged remedy, willingly convinced himself that here was the destined agent of her cure. I think it is literally true, and not a mere figure of speech, that her failing powers were first re-energized from the ample resources of his overflowing, sanguine vitality, lavished on her with the deliberate purpose to admit no doubt nor questioning. The returning health current, when thus set in motion, was strengthened and steadied by the power of her own will, the natural vigour of her constitution, and every aid that change of air and mental diversion could furnish; while it was kept free from contamination by the depuration of

her blood through depletion, and by the cessation of functional activity in the tissue which was the local fountain-head of the disease.

All these conditions and agencies, namely, the physiological crisis, the hemorrhage, the quality of the patient, the incidents and accidents of her station, are, without doubt, when combined, sufficiently powerful to account for a prolonged check in the downward career. But can they, exceptionally potent as they are, be accepted as adequate explanation of retrogression of the advanced local disease? Or must this, for the present, remain one of the unexplained, as well as exceptional, facts in the natural history of cancer?

I cannot answer. But the tissue infiltration, the enlarged and tender axillary glands, and the subsequent resolution of these morbid deposits were, and as a matter of record still remain, stubborn facts.

What of *cundurango*? it will be asked.

There is, I suppose, a qualified sense in which the idea of specific remedies is still admissible in scientific discussion. In no sense has *cundurango*, during the ample time which has elapsed since its introduction, established a title to be regarded as a cancer specific, whether by published results of its use or by chemical analysis of its components. In default of supporting evidence, I do not think the facts of this history, fairly interpreted, justify such claim.

I neither affirm nor deny its possession of medicinal properties suited to the general needs of persons debilitated like this patient; but the discussion of such alleged virtues is foreign to the purpose of this paper; and I am, therefore, unable to say more than that its public announcement came at a fortunate time for the patient by setting in motion potent agencies in her behalf.

In closing it will be well to recall the principal features which make the case memorable:—

1. The exceptionally clear family record.
2. The employment of a supposed specific which, as such, could neither earlier nor later than that very time have commanded the unswerving confidence of the patient and her friends; not earlier, because until then unknown—nor later, because since generally discredited after ample trial.
3. The retrogression of disease coincident with the employment of the alleged remedy.
4. The subtle manner in which the disease made its second advance and final triumph, wearing the garb of other affections—anæmia, neuralgia, neurasthenia, rheumatism, intermittent fever, I had almost said hysteria.
5. The wonderful hold upon life displayed both as a physical and mental trait, and the pre-eminent fortitude and bravery of the patient, surpassing any that I ever witnessed.
6. The almost total absence of the usual symptoms of meningeal

trouble, while the dura was so extensively metamorphosed by cancerous disease.

7. The entire non-implication of the mental faculties throughout.

8. The thoracic and abdominal pains, the intolerance of movement, the left facial palsy, and the hypersensitiveness of hearing, followed by deafness—all probably of centric origin, but not directly explained by the autopsy.

9. The explanation of the ptosis on the left side, by the discovery of the cancerous enlargement in the course of the third nerve, and *per contra*, the absence of symptoms, either motor or sensitive, during life, dependent on the similar but greater tumour found in the fifth nerve on the right side.

10. The unsuspected and unexplained hydrothorax.

11. Finally, the peripheral character of the disease from beginning to end, neither the brain nor any thoracic, abdominal, or pelvic organs or tissues being implicated in any recognizable degree.

DORCHESTER, May 1, 1876.

ART. XVII.—*Stricture of "The Œsophagus," from the Action of Caustic Potash; Œsophagotomy; Death; Post-mortem.* By CHAS. W. HORSEY, M.D., of Fernandina, Florida.

I WAS called hurriedly May 2, 1874, to see Eddie de F——, about five years of age, and informed that he had just swallowed some *concentrated lye*, which had been mixed for scouring and carelessly left within reach of the child, who had taken a mouthful, mistaking it for milk, which he was in the habit of drinking from the same cup. The mucous membrane of the entire buccal cavity, surface of the tongue, fauces, and pharynx, as far down as I could see, was raw, bleeding, and already greatly swollen, with portions of the caustic fluid still covering the parts.

The posterior nares, and to some extent the anterior portion of the nostrils also, were affected, indicating that the caustic had excited violent reflex action, and forcible ejection of a part of it through the upper air passages.

His breathing, though somewhat hurried, was not otherwise affected, and after careful examination, I was satisfied that none of the caustic had entered the larynx. I immediately proceeded to neutralize the poison with *strong vinegar*, which happened to be at hand, and succeeded in getting enough down him to satisfy myself that if any had entered the stomach, it was thoroughly decomposed.

Pure *olive oil* was then given to soothe the intolerable pain and burning, and the following mixture prescribed as an application to the affected parts. R. Potass. chloratis, ʒijss; acid. carbolicæ, f ʒj; glycerinæ, f ʒij; aquæ ad ʒviiij. To reach the surfaces lower down, I directed a teaspoonful of the mixture to be given internally every two hours, and ordered the

nostrils to be syringed out with the same at intervals of three or four hours.

A teacup of *iced milk* was ordered every hour; small pellets of ice allowed as often as desired, and directions given to withhold all solid food.

The act of deglutition, though exceedingly painful, could be accomplished perfectly, and the absence of vomiting or retching, and pain or tenderness on pressure over the region of the stomach, with retention of matters ingested, caused me to conclude that but little if any damage had been done that organ.

10 P. M., there was decided febrile reaction, incessant hacking cough, and straining to clear the throat, with great dysphagia and much restlessness. An anodyne was given with directions for its repetition as often as necessary during the night, and the treatment continued with the addition of *cold applications* externally to the throat, renewed every ten minutes.

May 3. 8 A. M. He had passed a tolerably quiet night under the influence of the anodyne.

The affected parts were immensely swollen and inflamed, covered with dirty sloughs, and shreds and sheets of detached epithelium, with great tumefaction of the whole cervical region. Deglutition very difficult, but, the ingesta still entered the stomach, it being, however, necessary for him to swallow very cautiously, to prevent spasmodic constriction of the pharynx, and return of the fluids given.

The constitutional disturbance was considerable; pulse 125, temperature 102.5°, though the continued absence of gastric symptoms relieved my mind of apprehension in regard to serious implication of the stomach.

Bowels and kidneys in good condition. Breathing somewhat accelerated, but, apart from the interference with the ingress of air, by the swollen tonsils and pillars of the fauces, normal.

The dysphagia being so great, I suspended the frequent use of iced milk, and instead, ordered enemata of beef essence, yolk of eggs, and brandy, at intervals of two or three hours. Treatment continued in other respects.

4th. Patient very restless; pulse 130; temperature 103.6°. Deglutition very difficult, but he craves food, and matters given enter the stomach. There was considerable discharge of muco-purulent matter during the night, together with the looser sloughs. Discontinued the cold applications to the throat.

5th. Condition very much the same; pulse 120; temperature 102.5°, denoting less fever. Abundant discharge of pus and mucus. Treatment the same.

6th. Appears a little brighter; pulse 115; temperature 101°. Is able to swallow with a little more ease. Sloughy membranes coming away abundantly, with copious purulent discharge, leaving behind extensive ulcers wherever the entire thickness of the mucous tissue had been destroyed. Breathes a little better through the nostrils, denoting some improvement in that region. Is allowed strong broths, milk, and other bland semi-fluid nourishment by the mouth, and the enemata discontinued. The local applications the same. Upon a close examination I discovered that the upper surface and edges of the epiglottis had been severely affected, leaving them ulcerated.

7th. Is beginning to improve. Ordered zinci sulph. gr. x to ʒj; to be added to the mixture for local use, but continued the same without the zinc as an internal remedy, decreasing the frequency of the dose to three times a day.

From this time the little patient began to improve, until, at the expiration of four weeks, but little trouble remained.

It had been necessary during the last few days of treatment, to touch a few points of granulations on the tonsils and posterior part of the pharynx with nitrate of silver, which healed them rapidly, leaving the parts in remarkably good condition under the circumstances. In watching the case closely, I had definitely concluded that none of the caustic could have entered the stomach, but feared that the mucous membrane of the lower portion of the pharynx and the upper part of the œsophagus had been damaged to such extent as to cause future trouble.

The child had always been decidedly strumous in appearance; his father died one year previously of tubercular phthisis, and the mother exhibited an unmistakable phthisical diathesis. In discontinuing daily attendance upon him, I therefore prescribed cod-liver oil and phos. lime, upon which he did well, and I saw him only occasionally during the succeeding two or three months.

About four months after the accident, in August, the mother consulted me in regard to the child, stating that he was frequently compelled while eating, to leave the table suddenly and vomit. He seemed entirely unable to control it, but there was no accompanying nausea, and he generally returned to finish his meal, or eat another, if the vomiting happened after he had eaten.

There was no pain or tenderness on pressure over the stomach, nor did he complain of any at other times. His bowels were in good condition, and the food fairly digested. The matters vomited consisted simply of the food taken in, and no pus or other abnormal element could be detected.

His general health not being strong, I again prescribed tonics, with a carefully regulated diet, but was apprehensive, from the symptoms, that either ulceration of the stomach existed, and I had been deceived in regard to the non-entrance of the potash, or, that raw and unhealed surfaces still remained at some point in the œsophagus.

Under the treatment the vomitings became less frequent, and his health improved to some extent.

He was carried north in September, and I did not see him again until late in December of the same year, when I was sent for on account of some difficulty he experienced in swallowing, apparently of a choking sensation. I examined the parts carefully, and finding the tonsils hypertrophied, and the uvula elongated and inflamed, concluded that this condition probably caused some of the sensations of which he complained, but, instinctively dreaded the development of stricture.

Astringent gargles and applications were ordered, and the case kept under close observation for several weeks, when, no improvement following, the above-named parts were excised, with the idea that they interfered, to some extent at least, with deglutition—and their removal would relieve any reflected symptoms that might exist, as well as the impediment that they offered in swallowing. The parts healed speedily, but the operation failed in benefiting the main difficulty, which, recurring at longer or shorter intervals, denoted clearly that organic obstruction was developing in the tube.

The inability to swallow at first continued for a short while only, but gradually, during a period of three or four months, persisted longer, 24, 36, and 48 hours passing, during which time not an atom of anything could enter the stomach.

At these times the child became perfectly frantic with hunger and

thirst, incessantly crying for and attempting to swallow nutrient fluids and iced water, which, passing as low as the stricture, were immediately returned. Having from the beginning feared the ultimate occurrence of organic stricture as the result of cicatricial contraction, I had warned the mother against allowing him solid or very stimulating food, directing that his diet should consist exclusively of semi-solid and fluid articles of non-irritant character. In observing the phenomena at these seizures I very soon noticed that they were excited under one of two conditions, or a combination of both: the one, when he attempted to eat solids or stimulating substances, which appeared at once to excite spasmodic contraction and closure; the other, whenever he "took cold" the mucous surfaces becoming congested and swollen, narrowed the passage, at the same time rendering the surfaces more susceptible to irritation, induced the most persistent attacks.

My treatment consequently depended upon the existence of the one or the other condition. If simply spasmodic constriction, I directed 10 or 15 grains of chloral hydrate to be injected into the rectum, along with some nutritious fluid; kept him in bed and repeated the dose as often as required, and succeeded usually in relieving the closure after two, or at most three doses of the chloral. This agent was chosen, because it rapidly affected him, and after sleeping six or eight hours, he would usually awaken relieved, be able to take his food and seem but little depressed. On the contrary, chloroform, when given to full anæsthesia, which was always necessary to overcome the spasm, prostrated him to such an extent that it took days for him to fully recover.

When the closure depended upon congestion of the mucous membrane, external applications were made to the throat, and astringent gargles and liquids given internally, with as much iced water as he desired, and if, as sometimes happened, spasmodic complication existed, a full dose of chloral was given at bedtime. If the closure endured for over twelve hours I insisted upon the systematic use of nutrient enemata to keep up his strength. The amount of food that he would take after a relaxation of his throat, if allowed to do so, was incredible.

Despite these frequent interruptions to nutrition, the child kept in pretty fair condition, exhibited evidences of growth, and mentally was unusually bright for his age.

I made frequent examinations of the parts, both at the time of closure and intermediately, with all characters of bougies, catheters, and probangs, attempting patiently and persistently to pass and dilate the stricture, but succeeded on one occasion only in doing so, my instrument at that time (a No. 8 black, bulb-pointed bougie), after getting into the stricture, being so tightly grasped that it was impossible to get deeper, and required much force to withdraw it. After repeated trials and failures, it was evident that a gradual narrowing of the calibre of the tube was taking place, which sooner or later would prove fatal unless, by operative measures, it was possible to reach the stricture, and by its incision or division render the use of bougies practicable for dilatation. In measuring the depth and location of the stricture, my instruments had invariably been arrested at the same point, viz., a little below the beginning of the œsophagus, about on a line with the fourth and fifth rings of the trachea. Making due allowance for spasmodic constriction, I naturally concluded that it began, or was located about this point.

The facts and probabilities of the case were candidly stated to the mother, and the question of operative interference discussed. She was

unable to make up her mind to any definite action, and being in the habit of visiting the North every summer, I advised her on her next visit, which was shortly to occur, to consult an eminent specialist on diseases of the throat, whose address I gave her, in regard to the child's condition. She was compelled to postpone her departure a week on account of a closure of her son's throat occurring the night before they were to start, which proved to be the most serious that he had yet suffered, lasting for *four days* or 96 hours, during which time he was sustained entirely by enemata.

He stood the journey North very well, and after a few days' rest was taken to New York city, where it was found that the gentleman to whom I had referred her was out of town for the summer. She was then induced by friends to take him to the "Metropolitan Hospital" in that city.

He is there stated to have been thoroughly examined, with and without chloroform, the laryngoscope and other instruments being used, but without satisfactory results or any encouragement being given in regard to his future. He returned home about Dec. 1 (1875), after an absence of over three months, during which time the closures had occurred at varying intervals, sometimes a few days only, and again a week or two elapsing between, continuing from a few hours to two or three days. Between times, however, the mother, a very observing woman, noticed an increasing inability to swallow anything but the simplest nourishing fluids, these even requiring a longer time to pass than formerly. After his arrival home, two or three weeks passed before the occurrence of another complete closure, which, however, lasted only a short time, and then relaxed. For two or three weeks immediately following he suffered almost daily, but as his condition had become so chronic, the attacks or rather closures failed to excite the alarm that they had in the beginning, and consequently I was seldom sent for or informed.

Over a year previously he had become affected with a chronic cough, accompanied with more or less expectoration, and auscultation denoted tubercular deposit in the apices of both lungs. On his return from the North this time I noticed an increase in his lung symptoms, and that he was greatly emaciated.

I continued to advise the use of cod-liver oil and tonics, and now saw him only occasionally, until Sunday, Feb. 13, 1876, when I was sent for and informed that his throat had been closed since Thursday before (the 9th), and that nothing had entered his stomach since that day.

Every means that had on former occasions proved successful was now tried in order to relieve it, including thorough anæsthesia by chloroform, and the patient use of bougies and catheters, but without avail. He was nourished every two hours by enemata of beef essence, eggs, and brandy, but his cravings for food had become so great that he incessantly swallowed mouthful after mouthful of different kinds of nutrient fluids, until gallons were consumed in the vain effort to satisfy his terrible desires. Chloral was given *per rectum* occasionally to compel sleep, in order, for a little while at least, to stop these ceaseless efforts, which were so distressing to himself and painful to his attendants.

His mother had long since been aware of the probable termination of the case, and of the only alternative offering the slightest chance for the prolongation of his life, but had always refused consent to an operation. She was now told that it could not be postponed if anything was to be gained by it, and that under any circumstance the case was desperate, and the chances doubtful. She would not consent until it was plain, even to herself, that death was inevitable, and on the morning of the 17th, as-

sisted by Drs. E. G. Clay and J. D. Palmer, I undertook the operation of œsophagotomy.

The child was put under the influence of ether, and the usual incision for that operation made on the left side of the neck. Owing to his extreme emaciation and complete dryness of his tissues, the operation was almost bloodless, and comparatively easy of performance, and in a few minutes I reached the œsophagus; catching up the tube, I opened it, but was unable to force a bougie, which had previously been passed down as a guide, through the opening.

It was withdrawn, and a smaller one introduced through the wound and passed upward to ascertain if the stricture was above the opening; it, however, came out of the mouth. The direction of the bougie was then reversed, and it was passed toward the stomach, when, after entering about two and a half inches, it could not be made to progress further. Smaller instruments, both of metal and gum, were patiently and carefully tried, and some force used to pass, but without success, until the profoundly depressed condition of the child compelled all efforts to cease. The wound was closed with carbolized silk sutures, and a compress of lint soaked in carbolized oil applied, and kept in place with a light bandage.

He reacted perfectly in about an hour, and beginning to complain of pain in his neck, was given 15 mns. of tr. opii per rectum, put in a warm bed, and directed to have nutrient and stimulant enemata every hour. He slept quietly during the greater part of the day, but was evidently sinking, his weakness being extreme. He exhibited full consciousness whenever he awoke, but was too much prostrated to move, and did not call for food or drink after the operation. He grew weaker during the night, and died next morning at 9½ o'clock, about twenty-two hours after the operation.

Post-mortem.—The body was opened three hours after death in the presence of the gentlemen who had assisted the previous day. The incision made for the operation was extended downwards, and the œsophagus followed from the opening down to its termination in the stomach. The stricture was found to be situated *within the thorax*, about one and a half inches below the clavicle, and four inches from the cardiac extremity of the œsophagus.

The portion above the stricture was, as usual in such cases, dilated, and that below, very much contracted. On first opening the abdomen, the stomach was immensely distended by gas, which escaped, leaving the organ entirely empty. After carefully noting the condition of the trachea, which was found to be perfectly healthy, and failing to discover any adhesion or other abnormal relation of it to the œsophagus, the latter, together with the stomach, was separated and removed. The stricture itself, consisted of an extreme narrowing of the tube for one and one-fourth inches, *into a dense fibrous cord*, about one-fifth of an inch in diameter, without any adhesion, thickening of the adjacent cellular tissues, or other evidence of hyperplastic action.

On dividing the tube in its entire length, the following appearances were found :—

From the pharynx down to the commencement of the stricture it was dilated, being about one and a half inches at the beginning, and tapering to three-fourths of an inch just above the stricture. The mucous membrane, from the posterior part of the pharynx downward, exhibited everywhere evidences of the caustic action in patches of cicatricial tissue more or less extensive, completely devoid of epithelium, with intermediately great hypertrophy of the membrane remaining. On cutting through the

strictured part it was found to be tough and fibrous, having lost entirely its normal histological characters. The entrance was through a ring of fibrous tissue about two lines thick, and about the diameter of a No. 8 catheter, gradually narrowing until, an inch and a quarter below, it terminated in complete occlusion. Below the stricture the mucous membrane was perfectly healthy, and the stomach presented no trace of the caustic.

Numerous softening tubercles were found in the lungs, confirming observations made before death.

The point of especial interest in this case is, the length of time that life continued after the development of almost complete closure. For at least eight months the child was sustained, practically by enemata, and yet, until within two and a half months of his death, continued in fair bodily condition, and gained a little in stature.

The propriety of an operation in this instance may possibly be questioned on theoretical grounds, but finds, in my judgment at least, ample justification in practice, in the attempt to relieve, even under desperate circumstances, the extreme horrors of death by starvation; horrors only fully appreciated, perhaps, by those so unfortunate as to be compelled to deal with them.

That œsophagotomy, under such circumstances, is to be preferred to gastrotomy, seems also natural, not alone from the fact that the statistics of the latter are even more unfavourable than the former, but that, where temporary relief alone is aimed at, the conditions determining the success of the latter in young children, are too many, and the constant dangers of gastritis and peritonitis so great as to give preference, in them at least, to the former.

The post-mortem demonstrated very clearly that under no circumstance could an operation have been successful, and surprised me no little, that I should have been so much mistaken in determining the depth of the stricture, after the trouble taken to do so, as well as by the extreme atrophic condition of the parts. I had been prepared to find extensive adhesion and thickening of the tissues, but not such complete atrophy.

March, 1876.

ART. XVIII.—*Case of Gunshot Wound of the Spinal Cord.* By HENRY T. DANA, M.D., Courtland, N. Y.

THE following are the salient points in the history of this case, which may be of interest as showing the duration of life after so grave an injury:—

S. C. P., farmer, aged 33 years, in robust health, was lying at 10 o'clock P. M., Oct. 16th, 1875, on a bed, laid on the floor of his house. He was aroused by the breaking in of a window at the foot of his bed, and when in the act of rising he received a wound from a rifle shot, directed from the broken window. The ball penetrated the right side, between the

8th and 9th ribs, about four inches below the posterior axillary border. The usual shock and hemorrhage followed. Paralysis of sensation and motion resulted in the lower extremities, and that portion of the trunk below the site of the wound. In about two weeks *bed-sores* began to develop, which eventually laid bare the sacrum, both ilia and both os femora, to nearly their whole extent. Death ensued on February 7th, 1876, 113 days after the injury.

With the assistance of Dr. J. W. Hughes, of this place, I made an autopsy twelve hours after death. Body much emaciated; usual cadaveric rigidity. There were circumscribed softening and enlargement of the right posterior border of the liver; the entire weight of the organ was $4\frac{3}{4}$ lbs.

There was a fistulous track extending transversely across the lower border of the inferior lobe of the right lung, in the direction of the spine, but was closed for about three-fourths of an inch from the surface next the spine.

The spinal column showed no traces of having been penetrated by a foreign body, but on making a longitudinal section of the lower dorsal vertebra, an irregularly flattened leaden missile was found at the site of the 11th dorsal vertebra, on the left side of the spinal canal, and adherent to the membranes of the cord.

The spinal cord was thoroughly softened and disintegrated below the lesion described.

ART. XIX.—*Case of Natural Catalepsy.* By THOMAS H. STREETS,
M.D., Passed Assistant Surgeon, U. S. N.

THE following history is given, not so much to prove that cases of natural catalepsy still occur, as to reflect some light upon the origin of the disease. "The most common exciting cause is supposed to be strong mental emotion, and this may be either acute, or operating through a number of years," says Dr. T. K. Chambers. In this case the cause was evidently not emotional; it had a distinct history, and could be traced back to a very probable origin.

Thomas Lakin, seaman, aged 42 years, and a native of England, was shipped on board the U. S. steamer "Narragansett," September, 1874, at Mare Island Navy Yard, California. He was submitted to a rigid physical examination before shipment, and was pronounced sound and in robust health. He was five feet and five inches high, and weighed about 160 pounds. Complexion fair; hair dark brown and turning gray. He certified in the presence of witnesses that he had no disease concealed or likely to be inherited; an extended after-acquaintance led me to believe that this statement was true, as far as the patient's own knowledge extended. He was always remarked for his retiring disposition. He had been on the ship but a very few days when his actions were noticed as being a little peculiar, and I was requested to observe him, so as to form an opinion in regard to his mental condition. These, however, soon

ceased to attract attention, and we came to regard them as the effects of a recent debauch.

But he still continued very reticent; he never had much to say to others, and did not cultivate acquaintances like the rest; yet he was liked by all, on account of his industry and willingness to always "lend a hand" when anything was being done. On two separate occasions he jumped overboard and rescued two of his shipmates from drowning, and displayed a great deal of coolness and bravery both times. I mention this to show that the man had not one of those excitable, emotional dispositions such as would predispose him to an attack of catalepsy of this origin. At all the times when the attacks occurred he was engaged in some monotonous duty entirely free from excitement. So much for the disposition of the patient.

Previous to shipping in the government service, he had been employed on a steamboat on the bay of San Francisco. While there an accident occurred, which very probably had something to do in giving rise to his trouble; a boiler explosion took place, and the boat was blown in pieces. He stated that he received no injury at all from the explosion, that he was not struck by any of the flying missiles, nor scalded by the steam, but that the only inconvenience that resulted to him in consequence of the accident was to find himself projected into the water by the force of the explosion.

Some time after this occurrence, I do not remember the exact time, but somewhat less than two months if my memory serves me rightly, he began to experience a prickling sensation, a sense of formication, in the region of the occiput.

It was not until after his enlistment in the service of the government, more than a year after the date of the explosion, that he became subject to the fits of unconsciousness. The first attack occurred while he was away from the ship, and while he was on duty in a small boat taking soundings. The account of the attack came to me from the officer who was with him at the time. It was the patient's duty to heave the lead. The officer noticed that he was neglecting his business, and spoke to him in consequence, but received no response; nor did he seem to pay any attention to what was said to him. He was in the attitude which he had assumed in the act of heaving the lead—the left foot planted in advance; the body leaning slightly forward; the right arm extended, and the line held in the left hand. The fingers were partially flexed, and the sounding line was paying out through them in this half-closed condition. The eyes were not set and staring, as is the case in epilepsy; but they were moving about in a kind of wandering gaze, as in one lost in thought, with the mind away off. So much like his natural self did he appear, that his officer again spoke to him, and this time rather harshly, under the impression that he was disregarding his orders intentionally. He

remained standing in this posture for two or three minutes, and maintained his equilibrium, and the boat was in no wise perfectly steady at the time. The whole duration of the trance was about five minutes.

After this he had a number of attacks, but none of them were longer in duration than the first; sometimes they lasted no longer than one or two minutes. Most of them occurred while he was away from the ship, engaged in the same work that I have mentioned above. They did not incapacitate him for duty, but some apprehension was felt lest he fall overboard, and for this reason he was closely watched.

The only premonition he ever had of the approach of an attack was a sense of suffocation, or an inability to breathe; he felt as if the mere effort to breathe would kill him. This did not always precede an attack; he experienced the sensation but once just before lapsing into unconsciousness; generally they came on without any warning whatever. Once he felt sick at the stomach immediately after he recovered consciousness; but as a rule they left him as well as they found him, and he would take up his work just where he had left off, as if nothing at all had happened. No symptoms of nervous derangement were noticeable in the case.

He had several attacks of this character, but none of them were so well marked as the first. Most writers on nervous diseases agree as to the mutual convertibility of catalepsy and epilepsy, and the subsequent history of this case is a further proof of the truth of this statement, and it well illustrates the close relationship there is between them. At first, as I have stated, the attacks were decidedly cataleptic in their nature; but as the disease progressed, they assumed more and more an epileptic character, and before he passed out of my care entirely the catalepsy had become converted into well-marked epilepsy.

The patient had been granted forty-eight hours' liberty on shore, and during that time he had partaken rather freely of alcoholic liquors; but he was not in the state called drunk. He reported himself on board the ship promptly at the expiration of his leave of absence, and he had been aboard but a very short while when I was called upon to see him in a fit. The loss of consciousness in this instance was accompanied by a complete loss of muscular control, and he had fallen to the deck. The face had a livid, cyanosed appearance, and the eyes were fixed and staring; but there were no convulsive movements of the muscles, nor foaming at the mouth. The manner of recovery was also similar to that observed in the cases of "*petit mal*" of the French; he presented the same dazed, confused appearance, like one who has been suddenly awakened from a sound sleep. This attack approached nearer the epileptic form than any he had had before. It occurred about six months after the manifestation of the first morbid symptoms. There was no history of epilepsy in his family that I could learn.

At this stage the case passed out of my care and sight entirely, in consequence of my being ordered to duty elsewhere.

Bromide of potassium in twenty-grain doses, given twice daily, at first, and afterwards reduced to once daily, given at night, controlled the paroxysms completely; but directly this medicine was discontinued they would recur.

Just what are the pathological conditions of the brain that give origin to the diseases of hysteria, melancholia, chorea, catalepsy, and epilepsy, it is impossible to tell in the present state of our knowledge; but it is very evident that they are all very closely allied, and may be produced by the same cause operating either with greater intensity in the individual cases, or through an extension of the primary lesion, thereby involving other centres of the brain.

ART. XX.—*A New Curve for the Gum-elastic Catheter in Prostatic Retention.* By T. H. SQUIRE, M.D., of Elmira, N. Y. (With a wood-cut.)

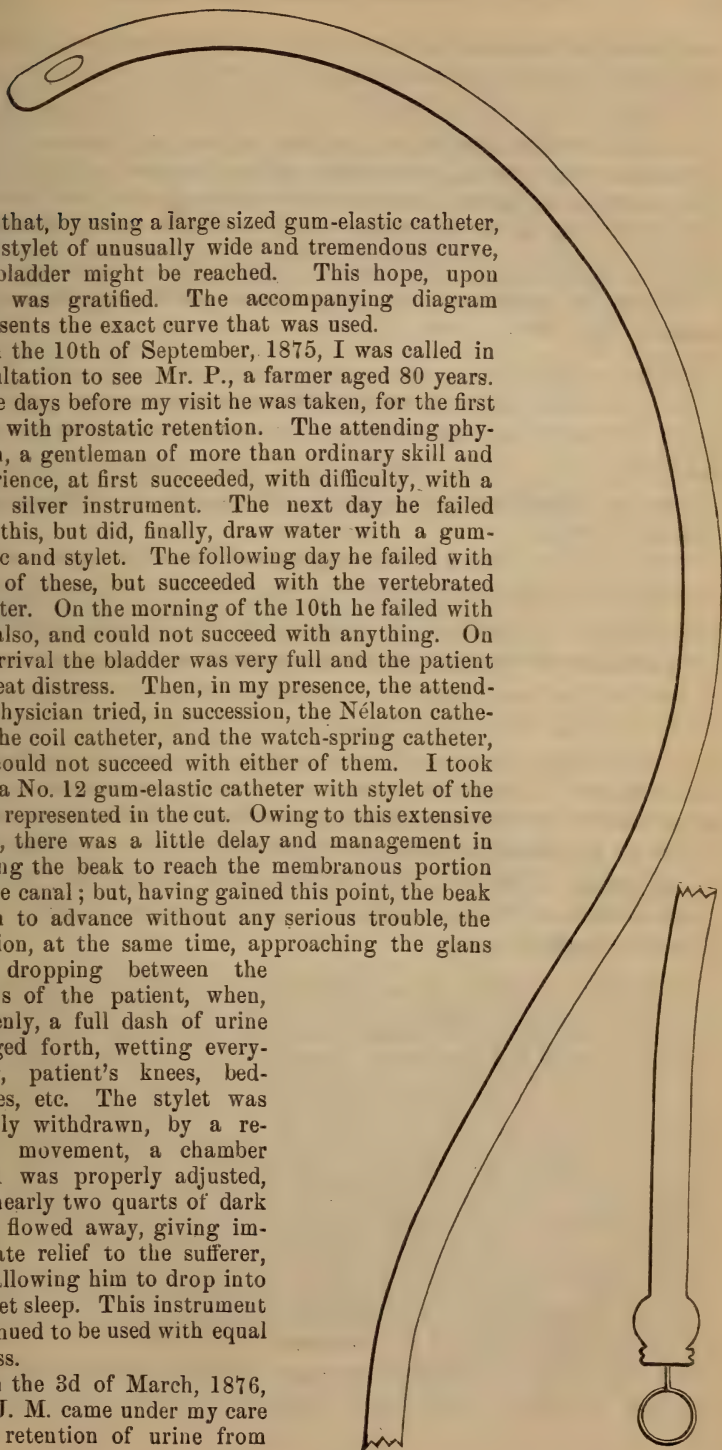
IN the preceding number of the *American Journal of the Medical Sciences*, Dr. T. C. Wallace, of Cambridge, N. Y., has paid a just tribute to the value of the Nélaton catheter in retention from enlarged prostate. He mentions two cases in which he had used it with the most happy results, and he adds that he had never experienced any difficulty in introducing it. Based upon this experience, he feels justified in "entirely discarding all other catheters." In this hasty conclusion he has suffered himself to be carried too far; for the soft rubber catheter will not, I conceive, always succeed as fortunately as in the two cases which he has reported. The following cases will serve as proof on this point, and will also show the superior excellence of the gum-elastic catheter under certain circumstances of peculiar embarrassment.

On the 2d of October, 1874, I was called, in consultation, to see Mr. H., a farmer 70 years of age, of large frame, but not corpulent. This was his second attack of prostatic retention. His family physician, a gentleman of skill and experience, succeeded on the previous occasion, but now he met with insurmountable difficulties. Only rigid silver and gum-elastic catheters had been tried. On my arrival forty-eight hours had elapsed during which time no water had escaped, and, of course, the tension and distress were very great. I first tried the vertebrated catheter. It passed almost its whole length into the urethra with ease, and then it suddenly stopped. Its beak was doubtless within a short distance of the bladder. Next the Nélaton catheter was tried with the same result. Then I tried the coil catheter of Dr. Cowan, of Danville, Ky., and no better success. Fourthly the watch-spring catheter of Dr. Cowan was tried, and this also failed. Two thoughts now came into my mind almost in conjunction with each other. One was a fear that I might fail entirely, with catheters, and be compelled to use the aspirator; and the other was a

hope that, by using a large sized gum-elastic catheter, with stylet of unusually wide and tremendous curve, the bladder might be reached. This hope, upon trial, was gratified. The accompanying diagram represents the exact curve that was used.

On the 10th of September, 1875, I was called in consultation to see Mr. P., a farmer aged 80 years. Three days before my visit he was taken, for the first time, with prostatic retention. The attending physician, a gentleman of more than ordinary skill and experience, at first succeeded, with difficulty, with a rigid silver instrument. The next day he failed with this, but did, finally, draw water with a gum-elastic and stylet. The following day he failed with both of these, but succeeded with the vertebrated catheter. On the morning of the 10th he failed with this also, and could not succeed with anything. On my arrival the bladder was very full and the patient in great distress. Then, in my presence, the attending physician tried, in succession, the Nélaton catheter, the coil catheter, and the watch-spring catheter, and could not succeed with either of them. I took then a No. 12 gum-elastic catheter with stylet of the curve represented in the cut. Owing to this extensive curve, there was a little delay and management in causing the beak to reach the membranous portion of the canal; but, having gained this point, the beak began to advance without any serious trouble, the pavilion, at the same time, approaching the glans and dropping between the thighs of the patient, when, suddenly, a full dash of urine plunged forth, wetting everything, patient's knees, bed-clothes, etc. The stylet was quickly withdrawn, by a reverse movement, a chamber vessel was properly adjusted, and nearly two quarts of dark urine flowed away, giving immediate relief to the sufferer, and allowing him to drop into a quiet sleep. This instrument continued to be used with equal success.

On the 3d of March, 1876, Mr. J. M. came under my care with retention of urine from



enlargement of the prostate gland. He is a corpulent man, weighing two hundred and fifty pounds, and his age is 67 years.

From that date to the present time (April 29th) his water has been drawn twice a day with a No. 8 gum-elastic catheter, and stylet of this same curve. On several occasions, during this long period of more than eight weeks, trial has been made with the soft rubber instrument, but it has invariably stopped at the prostatic portion of the canal, and no amount of coaxing or management can cause it to enter the bladder. But there has been no difficulty whatever with the gum-elastic and slender stylet curved to correspond with the foregoing model or wood-cut.

The "Jaques catheter" has also been tried in this case with unsuccessful result.

While, therefore, the greatest praise may be given, with justice, to the Nélaton catheter, we must never discard the time-honored gum-elastic which so often comes with triumph to the rescue in cases of extreme difficulty and danger. To the practitioner who is anxious to be fully equipped for prostatic retention, no better advice, perhaps, can, at present, be given, than the following :—

Keep always on hand a good assortment of Nélaton and of gum-elastic catheters, in a pasteboard box which is twelve inches long and four inches wide; and on the inside of the cover of this box, have as a pattern for ready use a *fac simile* of the foregoing wood-cut.

ART. XXI.—*Inflammatory Fibrinous Growth in the Trachea; Tracheotomy; Diphtheria; Death on the fourth day after the Operation.*

By ANDREW H. SMITH, M.D., of New York, Surgeon to the Throat Department of the Manhattan Eye and Ear Hospital, Physician to St. Luke's Hospital.

Miss D., æt. 14 years, a patient of Dr. J. C. Smith, was first seen by me about the 12th of February last, when she seemed to be suffering from acute laryngitis, coming on during a pneumonia which occurred while convalescing from measles. The pneumonia was accompanied by very little if any expectoration, and resolved very slowly. Dr. Janvrin, who was also called in consultation about this time, considered it to be of the interstitial variety. The patient had chronically enlarged tonsils, which were now more than usually swollen and very sensitive, rendering a laryngoscopic examination impossible. The voice was reduced to a whisper, and she complained of pain about the larynx, but there was no dyspnœa. Warm sedative inhalations were advised, and I did not see the patient afterward until the 28th, when I was called again in consultation, Dr. Janvrin being now associated in the treatment of the case. There was then extreme dyspnœa, the breathing being stridulous, while the face was dusky and the lips livid.

Laryngoscopy was rendered impossible by enlargement of the tonsils and the distress for breath, but I succeeded in reaching the larynx with

my finger, and satisfied myself that it was not a case of œdema of the ary-epiglottic folds. As it was evident that unless relief were obtained death must ensue within a few hours, tracheotomy was decided upon, and I performed the operation, assisted by Drs. Janvrin and J. C. Smith.

The trachea being exposed, the upper three rings were divided, but the moment the knife was introduced for this purpose it became evident that some unusual condition was present. The point of the instrument was not free within the trachea, and the incision was not accompanied by the usual sound of air entering through the wound. On withdrawing the knife, the margins of the incision remained in close contact, and it was with some difficulty that the tracheal dilator was introduced between them, the blades being bulbous at their extremities. By this instrument, I was enabled to open the wound sufficiently to perceive that I had cut into a solid mass which was firmly adherent to the inner surface of the trachea, and that, therefore, the incision did not open into the cavity of the latter. By prolonging the incision upward through the cricoid cartilage, access was obtained to the interior of the larynx above the obstruction. We could then see that this consisted of a mass occupying the greater part of the lumen of the trachea, and leaving only a small passage for air at the left and posterior side. The growth when incised gave rise to a slight hemorrhage, showing that it was vascular, and, on pressing the tip of the finger into the wound, it gave the feel of a somewhat soft, tough, fibrous structure, reminding one of pretty firm pleuritic adhesions.

With considerable difficulty a child's tracheal tube was forced past the obstruction, and the breathing was rendered sufficient, though not entirely free. On mentioning to the parents the nature of the case, they stated that the patient had spoken several times of a feeling as of "something drawing" in the right side of the throat.

The day following the operation a thin pellicle, which had been previously observed upon one of the tonsils, had assumed an unmistakably diphtheritic character, and the whole pharynx was soon invaded. The constitutional symptoms of diphtheria were speedily developed, and the patient, already weakened by protracted illness, succumbed from exhaustion on the fourth day after the operation. An autopsy was not permitted.

This case, as interpreted by those who saw it with me, as well as by myself, is, perhaps, unique. We regarded the growth as the result of a local circumscribed inflammation, giving rise to a plastic effusion underneath the mucous membrane, which effusion had become pretty thoroughly organized. The history of the case renders it probable that it had been as much as thirty days in forming.

In this connection, I would call attention to the great advantage which may often be derived from the use of a concave reflector worn upon the forehead in operations like the foregoing. In private houses especially, we are almost always dependent upon side light, be the source what it may, and the amount of available light is often very deficient. By means of the mirror, the light can not only be rendered vertical, but at the same time be concentrated so as to illuminate the bottom of the deepest wound. The aid thus afforded to the operator has only to be experienced to be regarded as invaluable.

ART. XXII.—*Diffused Popliteal Aneurism; Syme's Operation; Secondary Hemorrhage; Ligature of Femoral Artery; Tetanus; Recovery.* Operations by C. B. PORTER, M.D., Surg. Mass. General Hosp., Subsequent care and Report by Assistant Surgeon S. Q. ROBINSON, U. S. M. H. S.

JOHN L., aged 36, a Prussian by birth, with a probable syphilitic history, was admitted to the U. S. Mariner Hospital at Chelsea, Mass., April 7th, 1875, for Guinea worm. The entire crew of his vessel, a Gold Coast trader, were sufferers from this parasite. The period of incubation in all the cases was about ten months.

June 10. The last piece of worm was removed, completing a total length of 14 inches.

14th. Patient called attention to a small, deep, indistinctly defined induration in the lower and inner part of the thigh under the vastus internus muscle, the seat of considerable pain. It was supposed to be of inflammatory origin, and treated accordingly.

July 30. The swelling had increased in size and the skin had become tense and reddened.

31st. An exploratory incision showed the trouble to be a rupture of the popliteal artery. Dr. C. B. Porter, who was called in consultation, cut down upon the artery and ligated it *in situ* by Syme's operation, tying both ends. At the proximal end, the artery was readily separated from the surrounding parts and the ligature applied, but at the distal end inflammation had so glued the tissues together, that isolation of the artery was impracticable, and a curved needle with ligature was passed. The sheath was necessarily included in the ligature, as it could not be separated from the vessel. The opening in the artery was two inches long, involving more than half its circumference, and situated just below Hunter's canal. There was nothing like a sac. The cavity, containing a pint or more of clotted blood, was formed by the separation of the muscles.

It was a matter of much doubt if the patient would rally after the operation in spite of repeated rectal injections of brandy. Heaters were applied, and, at the suggestion of Dr. Porter, the limbs were kept elevated above the head until the feeble and thready pulse of 140 became slower and stronger. For twenty-four hours the patient was in a semi-unconscious condition, with incessant vomiting and purging, which did not entirely cease until four days later.

August 10. A secondary hemorrhage occurred, with the loss perhaps of $\frac{3}{4}$ x of blood. A strap tourniquet which had been kept on, partly screwed up, in anticipation of this accident, had been removed eight hours before at the urgent request of the patient. The bleeding was checked by the fingers of the patient himself until assistance reached him. The femoral was tied by Dr. Porter slightly below the apex of Scarpa's triangle, in order to leave room for future ligation in case of need. About $\frac{3}{4}$ ss of blood was lost. The wound healed by first intention, and the patient quickly rallied.

11th. Patient complained of stiffness of the jaws and difficulty in swallowing. Two days later, there were general tetanic spasms. The lower wound was then syringed out daily with a solution of chloral hydrate (grs. xv-aq. $\frac{3}{4}$ j). It is worthy of note that after the artery was tied

above, the discharge, previously free, diminished so as to hardly moisten the dressings, although the process of repair went on unchecked. Chloral grs. xv, and potass. brom. grs. l, were administered by the rectum with a frequency regulated by the severity of the spasms, but not oftener than once in two hours. Occasional subcutaneous injections of morphia. The temperature ranged from $99\frac{1}{2}^{\circ}$ F. to $103\frac{1}{2}^{\circ}$ F.

25th. There was some mental aberration due to the chloral. The patient passed his urine and feces in bed. The spasms were much less severe.

September 5. No spasms, though the pain in the wound and along the thigh, which had been a prominent symptom from the outset, was still troublesome.

October 16. An attempt, made under ether, to straighten the leg, which was immovably flexed at a right angle, failed. The muscles of the thigh still seemed to be in a state of spasmodic contraction. Extension, which was then applied by weight and pulley, could only be borne at first for an hour daily, but the weight and time were both gradually increased. Patient much debilitated and very anæmic.

March 4, 1876. Patient was discharged in fair condition, with the leg almost straight. Tenotomy of the hamstring tendons was declined. The tibial pulse could not be felt.

May 1. Patient has been working as bartender in Boston since his discharge. Leg quite straight. Has no trouble of any sort.

ART. XXIII.—*On the Subcutaneous Injections of Ergotine.*

By R. CROCKETT, M.D., Wytheville, Va.

Soon after the number of the *American Journal of the Medical Sciences* for January, 1875, was received by me, containing the interesting account of Prof. Da Costa's "Cases of Splenic Lukæmia and their treatment with Hypodermic Injections of Ergotine; with remarks on the Hypodermic use of Ergotine and Iodine in Glandular Enlargements," I had under treatment a case of splenic lukæmia, which I will briefly report:—

February 3, 1875, Mary S. (colored), 48 years of age, had been sick for several months, but could not give an intelligent account of her condition, or how she had been treated.

I found her spleen much enlarged, displaced, measuring eight inches in length, and hanging in a line nearly vertical in the direction of the left pubic bone, width five inches, approaching the linea alba in its descent, much increased in thickness, gradually thinning towards its edges; about the centre, near the linea alba, I could detect a notch in which my largest finger would lay, well defined, movable; percussion and manipulation generally gave slight pain; it became thinner at its lower edge, and semilunar in shape; gave much inconvenience from its weight when lying on the right side. Below and nearly connected with the spleen, it was associated with the diffuse development of fatty matter in the subcutaneous cellular tissue in the lower part of the abdomen, hanging in a semilunar

fold over the pubic bone about three inches long, and one and a half thick in its centre.

Percussion and auscultation of the chest disclosed slight cardiac derangement; heart acting feebly; no cardiac murmur discoverable; second sound rather indistinct; pulse 102, small and compressible; respiration 22. Peritoneal sac somewhat distended with serum, and also slight effusion into cellular tissue of lower extremities; obstinate constipation; little or no appetite. Urine gave decided indications of albumen.

Diagnosed splenic leukæmia complicated with slight cardiac derangement.

I shall waive the discussion of the pathology of this disease, as the contribution of Dr. Da Costa in the number of the journal alluded to, is so full and admirable in all that is known at present in relation to leucocythemia, and content myself with saying that I was deprived of making a satisfactory examination of the blood, inasmuch as the microscope to which I had access was too deficient in magnifying power to give satisfactory results as to the red and white globules of the blood. My object mainly is to give the result and success of the treatment; premising that in this locality, it is a disease rarely met with, having met only with a few cases, in a practice of now upwards of 48 years.

Treatment.—Gave a hypodermic injection of ergotine 4 grains in distilled water and glycerine amounting to 15 minims. Also directed 20 minims of tincture of chloride of iron in sugar and water three times a day. One quarter of a grain of Clutterbuck's elaterium as often as necessary to move the bowels without inducing purgation. Two injections of ergotine were given hypodermically on alternate days over the region of the tumour. After that they were given subcutaneously in the cellular tissue of the arms. Diet, nutritious, and generous treatment continued until March 20.

After the third hypodermic injection, the spleen was manifestly lessened in size, and continued to subside until this date, when all enlargement had disappeared, then also an entire subsidence of the dropsical condition, (with greater comfort to patient, in all respects); appetite gradually returned and became good; slept well at night.

April 12, condition greatly improved; slight traces of albumen in urine still discoverable; pulse 80 to 84; respiration free.

The fatty development in connective tissue below left pubis, remaining as about at first, I determined to try the effect of hypodermic injections of ergotine into its substance. I am gratified to state that five hypodermic injections on alternate days almost entirely removed it, a very slight induration only remaining.

Another case, now of great interest to me, presented itself during the month of March.

E. S. (bright mulatto), aged 25 years, had her right mammary gland removed in June, 1873, tumour large and indurated. Microscopic examination gave decided indications of malignancy.

I assisted in the removal of the gland; the process of healing was satisfactory.

March, 1875, patient called for advice. Appearance rather sallow, somewhat emaciated.

Upon examination, found that in the process of cicatrization, adhesion had taken place to the pectoralis major muscle, presenting a sulcus or furrow that the largest finger could be laid in the entire length of the

primary incision; made by the diffuse development of fatty matter in the connective tissue both above and below the cicatrix of about equal size, had recently been gradually enlarging.

About an inch below the centre of the margin (of the left mammary gland), I found an indurated tumour, of circumference of a Mexican dollar, half an inch thick, movable and decidedly painful to the touch; some time had elapsed since she first discovered it, but could not say accurately how long.

Treatment.—Gave eight hypodermic injections of ergotine, 4 grains each, at intervals of three days; introducing the needle each time into the body of the tumour, about two-thirds through it, each time retracting the needle as the piston was forced up. For 24 hours after the injection the tumour was decidedly more sensitive, tender, larger, and harder; it would then partially subside before the next injection.

After the eighth injection, tumour decidedly enlarged, much harder, somewhat hotter and more painful. Soon afterwards it began to lessen, pain and soreness subsiding, and the tumour finally disappeared entirely. The development of fatty matter in the connective tissue bordering the cicatrix also disappeared.

June 26, she called at my office to be re-examined; found tumour entirely gone.

Careful manipulation of the parts disclosed no soreness or resulting adhesion to intercostal spaces from the use of the hypodermic injections.

October 27. General health good; no indications of tumour returning; can do all the work of a housemaid.

Miss G., aged 14 years, consulted me concerning a disfiguring bronchocele. Gave 13 hypodermic injections of ergotine, 4 grains each, from the 25th of May to June 30, 1875, in the arms.

Enlargement of gland entirely removed, scarcely a trace of it visible. Both internal and external use of iodine had utterly failed in this case. Remains well to date.

We must not be too sanguine from the result of the effects of hypodermic injections of ergotine in a single case. But as the mission of the physician is to alleviate when he cannot cure, I was induced in the case of E. S. to give the possibility of benefit from the hypodermic use of ergotine, and I have the consolation to know that life has at least been prolonged if not saved. Result of this case will be reported hereafter.

I now mainly rely upon hypodermic injections of ergotine, in pulmonary, gastric, and uterine hemorrhages. In the latter my experience is especially large, seeing much of all the morbid conditions of that organ.

In the conditions indicated, I beg leave to suggest a fair trial of the hypodermic injection of ergotine, the importance of the purity of which cannot be overestimated.

ART. XXIV.—*Case of Movable, or "Floating" Kidney.* By G. W. H. KEMPER, M.D., of Muncie, Indiana.

MAY 1, 1876, I was called to see Mrs. H., aged twenty-six, then advanced to the third month of her second pregnancy. The first labour, which was tedious, occurred on the 26th day of December, 1874. From her I gathered the following history: About the middle of March last she first noticed a "lump" in her right side, attended with a motion, which led her to believe that she was several months advanced in pregnancy and had quickened. These sensations frequently recurred, but, finally, the fact of the tumour being isolated and located high up in the abdomen, created a doubt in her mind, and my advice was asked. She is a delicate woman; the abdominal walls are so exceedingly thin that I had not the least trouble in making a most satisfactory examination. When lying upon her back I discovered in the right hypochondrium, immediately beneath the last true rib, a tumour, in size and shape corresponding to the human kidney. This tumour was driven downward by each full inspiration, and with my hand I could move it still further downward, even below the umbilicus. It was also quite movable either to the right or left to an extent of several inches. Furthermore, I was able to grasp the body in my fingers through the abdominal walls and lift it upward.

In addition to the movements referred to above, she said the tumour gave rise to a dragging sensation when upon her feet, as well as a sickening or uneasy sensation when I grasped it in my hand. Roberts (*Urinary and Renal Diseases*, 1st ed., p. 502) refers to a similar case, where a woman attributed these peculiar movements of a displaced kidney to the movements of a child in the womb. That it was not due to foetal movements in my case is evident. She last menstruated February 1st, making just three calendar months to the day I saw her, and the fundus of the uterus barely rose above the pubes, thus indicating that the term of pregnancy was hardly sufficiently advanced for quickening at the date I saw her, much less when she first felt the movements, namely, about the middle of March. The same author mentions epigastric pulsation as a complication attending a patient. The same phenomenon, whether a symptom or merely a coincidence I know not, was present in my own case.

The exciting cause in this case is unknown. Labour is regarded as a common exciting cause of this affection, but the long interval of time which elapsed from the date of the labour until the appearance of the lesion, seems to exclude that factor in this case. According to Roberts, movable kidney is much more common in women than men. Of 51 cases he collected, 46 were women, and but 5 men. He also found that of 46 carefully recorded cases, in 28 the right kidney alone was movable, in 8 the left kidney alone was movable, and in 10 both kidneys were movable.

(ARTICLE XXV.)

A CENTURY OF AMERICAN MEDICINE.

1776—1876.

III.

OBSTETRICS AND GYNÆCOLOGY.

By T. GAILLARD THOMAS, M.D., Professor of Obstetrics and Diseases of Women and Children in the College of Physicians and Surgeons, New York.¹

THE progress of philosophy, theology, politics, and science has never, in the history of the world, been marked by steady, monotonous, and gradual advancement. For long periods it has appeared to be so, but now and then, once in a century perhaps, each of these departments has felt the impetus imparted to it by the influence of some rare and stupendous genius, which, in a brief period, has effected more than years of patient toil had before accomplished. Some man, towering in intellect above his fellows, ordained by nature to lead into unexplored regions, and to dominate new fields of thought, has here and there made his appearance, and marked his epoch as an era. In more modern times philosophy has felt the influence of Bacon, theology that of Luther, science that of Newton, and politics that of Napoleon.

So has it been with the progress of each of the departments of the healing art. Surgery, medicine, chemistry, anatomy, physiology, and the collateral science of botany, has each in turn, since the revival of learning, felt the propulsive influence of Paré, Boerhaave, Berzelius, Morgagni, Harvey, and Linnæus.

Such an impetus was given to obstetrics late in the eighteenth century. Until that time this department was chiefly allotted to women, and the few male practitioners who devoted themselves to it occupied a lower professional position than those engaged in medicine and surgery. He who was to establish the dignity of obstetrics, to elevate it to the position of a science, and to open the way to its rapid progress, appeared in the person of William Hunter, whose work upon the gravid uterus was published in 1774. It is true that the writings of Smellie and Levret, great contributions to obstetrics as an art, preceded it; but it is equally true that Hunter laid the corner-stone of the science in giving to the profession a work which may be said to have been to obstetrics what that of Euclid was to mathematics. It was the forerunner of the subsequent eminently valuable labours of Naeglé, and the inspiration of those of Denman and his school.

Two years before the foundation of this republic the new era of modern obstetrics was established, which has now lasted for a century. Its influence, immediately and decidedly felt in Europe, gave little evidence of its existence here, however, for the next quarter of a century, probably,

¹ The author desires to acknowledge his obligations to Dr. S. Beach Jones, Jr., for valuable assistance in the preparation of this report.

in great part, for the following reasons. Its inauguration found on this continent an infant nation engaged in a struggle for independence with the formidable power of Great Britain, which taxed every resource for the following seven years: sparsely settled, without financial resources, and unprovided with the materials for sustaining a lengthy war, it became necessary for self-protection that the private resources, the individual efforts, the undivided energies of its people should be concentrated upon one single, sacred object. From this it resulted that until the year 1783 attention was entirely abstracted from the pursuits of peace—agriculture, manufacture, science, art, were all neglected.

The establishment of peace found the country entirely unprepared at once to resume those pursuits to which it had so long been a stranger. The people were impoverished, the land was unproductive, the credit of the country was not yet established, and its exchequer was empty. The immediate material wants of the inhabitants claimed their almost undivided attention, and it is not a matter of surprise that for some time we find few records of national or private efforts put forth in behalf of science in this field or in any other. As an art, practised chiefly by midwives, obstetrics was a vigorous plant, deep-rooted and strong; as a science, a delicate shoot, which feebly struggled with adverse circumstances for life; while the very seed of the sister branch of gynecology may be said to have been unsown.

In spite of the prejudices of the community, at an early period even in colonial times a very small number of physicians, recognizing the claims of obstetrics, devoted themselves to its practice. In 1753, according to Bartlett,¹ Dr. James Lloyd, a pupil of Smellie and Hunter, settled in Boston, and in the following year systematically began the practice of midwifery. He was the first practitioner so devoting himself of whom records can be found. In 1762 the same course was pursued by Dr. William Shippen, Jr., of Philadelphia; and these two pioneers in obstetric science began the great work here which Smellie, Hunter, and others were striving for abroad, of placing this important branch upon a level with the sister departments of medicine and surgery. The success of their efforts may be judged by the facts that in 1762 Dr. Shippen delivered a course upon obstetrics; that in 1767 Dr. J. V. B. Tennant was appointed to a special chair on this subject in New York; and that, thus introduced as a distinct department into the curriculum, the subject has to the present day been recognized as one of paramount importance and dignity.

During this period essays were written by Orne, Osgood, and Hol-yoke² upon pudendal hematocoele, the Sigaultian operation, rupture of the uterus, retroversion of the gravid uterus, extra-uterine pregnancy, and descriptive of cases in practice, evidencing an effort in the right direction.

In 1791³ the operation of gastrotomy for removal of an extra-uterine fœtus was successfully performed by William Baynham upon the wife of a Virginia planter. The same gentleman⁴ operated with similar success upon a negro slave in 1799. Before Baynham's first case the operation had been only once performed in this country, namely, in colonial times,

¹ Med. Communication and Dissertations of Mass. Med. Soc., vol. ii. p. 235.

² Outline History of Gynecology in New England, by H. R. Storer.

³ N. Y. Med. and Philos. Journ., Jan. 1809, vol. i. p. 161.

⁴ Ibid., Jan. 1809, vol. i. p. 165.

by John Bard, of New York, in 1759.¹ Subsequently it was repeated by Wishart² and Alex. H. Stevens.³

The dawn of the nineteenth century found the United States ripe for progress and advancement, and while it was yet young the lamp of medical science began to burn with a brightness which it had not shown before, and which promised well for the future. We will not stop to inquire whether this improvement in progress was due to the fact that a nation, fatigued, exhausted, and impoverished by a severe conflict, had now had time for recuperation; or whether, in the language of the learned Beck,⁴ this was due to the "influence which our peculiar form of government exerts over the character and progress of science." Let the sequel of this sketch prove, too, whether there be any truth in his assertion that "it is unquestionably true that our medicine participates largely of that spirit of independence which characterizes the civil and political institutions of our country." However much patriotic zeal may prompt an inclination to accept this view, let no American ignore the fact already stated, that the way to progress in obstetrics was pointed out by the great Englishman, Hunter; and that in the very first year of the new century a similar impulse was given to gynæcology by the eminent Frenchman, Récamier.

The greatest advances which have been made in the science and art of medicine in modern times have all been due to the subordination of facts to physical investigation and demonstration. The prodigious strides made in pathological anatomy during the time intervening between Morgagni and Virchow have been due to the microscope. The great modern advance which has been made in the diagnosis, prognosis, and treatment of cardiac and pulmonary affections, has resulted from the discovery of auscultation and percussion. Diseases of the deep structures of the eye have been comprehended through the instrumentality of the ophthalmoscope. The laryngoscope has brought order out of confusion in affections of the larynx; and clinical thermometry has done more than anything else in our century to remove diagnosis and prognosis from the domain of speculation, and place them upon a scientific basis. At the commencement of the present century such an influence was evoked in behalf of gynæcology in the speculum uteri, with which Récamier, in 1801, began the study of the diseases of female sexual organs.

The history of few instruments which have come down to us from ancient times can be so clearly traced as this. Directly back through the ages which intervene between our civilization and that of the Greeks, its existence can be detected; and yet its merits and advantages had been gradually so lost sight of that Récamier may be said to have re-discovered it at the time just mentioned. The labours of this man, more than those of any other in modern times, have advanced gynæcology, and given to it its present position of dignity and usefulness.

The duty of presenting a summary of America's contribution to obstetrics and gynæcology from the time of Hunter and Récamier to our own, is truly an arduous one. So extensive is the literature which has been contributed to these subjects that even a faithful examination of it is difficult. Much more difficult is the task of separating the wheat from

¹ Parry on Extra-Uterine Pregnancy, p. 224.

² Phil. Journ. of Med. and Phys. Science, 1825, N. S., vol. i. p. 129.

³ N. Y. Journ. Med., May, 1846, p. 341.

⁴ Historical Sketch of the State of Medicine in the American Colonies.

the chaff in the material presenting itself, for, verily, there is a surprising amount of both to be found.

In 1806, Dr. George Clark¹ reported a case of extra-uterine pregnancy, where, the head of the child presenting in the rectum, he passed his entire hand into the bowel, and, seizing the head, extracted it. Some time afterward the body and secundines were spontaneously expelled. In this case the operation proved the practicability of introducing the whole hand into the rectum without doing serious damage to that viscus, and demonstrated the utility of so doing in just such cases as that here recorded. In this course he has since been imitated by Duncan, of Edinburgh, and Janvrin, of New York. Simon's recent advocacy of the procedure, for other purposes, is well known.

The year 1807 was signalized by two important occurrences in American medicine, the introduction of ergot into the materia medica as an oxytoxic, and the publication of the first work on midwifery which appeared in this country. Long before that time ergot had been known, and in Germany, France, and Italy had even been empirically used by midwives as a uterine stimulant. The name of the drug, indeed, in the German tongue is *mutterkorn*. To John Stearns, first president of the N. Y. Academy of Medicine, belongs the credit of demonstrating its oxytoxic effects to the medical profession, and giving it its deserved position as the most reliable and valuable of this class of agents. His first communication, dated Jan. 25, 1807, was written from his residence in Saratoga County to Mr. S. Akerly, and published in the *N. Y. Medical Repository*.² This attracted great attention, gave rise to many others of similar character, and very soon obstetrics had at its disposal a most valuable agent, capable of accomplishing a result with almost certainty which none other, discovered either before or since, has been able to effect. Ergot to-day stands unrivalled as an oxytoxic among drugs, and the good which has resulted from its use in post-partum hemorrhage is incalculable.

The first work upon obstetrics which appeared from the pen of a native author was that of Dr. Samuel Bard, of New York. This was published in 1807, and in 1819 had reached the fifth edition. In his preface Bard especially disclaims all originality, and declares that his work is a compend for the use of midwives and practitioners. The style of this work, though quaint, is strikingly simple, and the author appears to have been a careful, conscientious, and conservative practitioner.

"I confess," says he, "not without severe regret, that towards the end of thirty years' practice, I found much less occasion for the use of instruments than I did in the beginning; and I believe we may certainly conclude that the person who, in proportion to the extent of his practice, meets with most frequent occasion for the use of instruments, knows least of the powers of nature, and that he who boasts of his skill and success in their application is a very dangerous man."

It was during this, the first decade of the nineteenth century, that the greatest of all the contributions which the United States has had the good fortune to make to gynæcology, came forth from the then far west; a region from which so great an advance would at that early period have been least expected. This was the performance of ovariectomy by Ephraim McDowell, of Danville, Kentucky. The magnitude and im-

¹ Phila. Med. Museum, 1806, vol. ii. p. 292.

² Vol. v., 2d Hexade, p. 308.

portance of the procedure, the obscurity of its originator, and the fact that its practicability had long before been stated by eminent European authorities, all combined to render McDowell an object of distrust and obloquy. Many, both here and abroad, sympathized with the sarcastic expression of the then editor of the *Medico-Chirurgical Review*.¹ "A back settlement of America—Kentucky—has beaten the mother country, nay, Europe itself, with all the boasted surgeons thereof, in the fearful and formidable operation of gastrotomy, with extraction of diseased ovaries." Had this been stated in sober earnest, it would have been a modest and simple expression of what time, after a most searching examination, has proved to be the truth. It was, however, written in the bitterest spirit of sarcasm, the cloven foot of which is soon made apparent by the occurrence of this sentence: "Our skepticism, and we must confess it, is not yet removed."

Upon reflection, with the facts of the case clearly before us, the success of the western surgeon is not a matter of so great surprise. He was no illiterate, inexperienced, and rash adventurer, but a surgeon who had sat in his student days at the feet of John Bell and other eminent men, at that time composing the faculty of medicine at Edinburgh. "Every seminary of learning," says Sir Joshua Reynolds in one of his academical discourses, "is surrounded with an atmosphere of floating knowledge, where every mind may imbibe somewhat congenial to its own original conceptions." In Edinburgh the young American student imbibed some of this floating knowledge, and undoubtedly had the seed sown which afterwards ripened so lustily; for at that very time hints and suggestions as to ovariectomy were often thrown out by his teachers. Returning home, however, he bided his time. Before essaying his great conception he had already achieved a high reputation as a surgeon for lithotomy and hernia, and for fourteen years he cherished and reflected upon the idea of operating for extirpation of an ovarian tumour before an occasion offered for so doing.

It is evidently at variance with all the evidence at our disposal in reference to this discovery, to conclude that it was made by a sudden stroke of genius on the part of its discoverer. It should not be forgotten that what is styled genius is only the power of suddenly drawing deductions from premises slowly, carefully, patiently stowed away in the mind, studiously analyzed, and thoughtfully considered. Sir Isaac Newton expressed this opinion when, being complimented upon his genius, he replied that, "if he had made any discoveries it was owing more to patient attention than to any other talent." In our day metaphysicians are agreed in defining genius as a power of concentrating the mind in prolonged, fixed, and continued attention. Buffon tersely styles it a "protracted patience."

In 1809 the long-wished-for opportunity presented itself to McDowell,² and he operated successfully; then again in 1813, and again in 1816; although he did not publish these cases till 1817. What a commentary upon the grand nature of the man was this calm deliberation and hesitancy to rush into print! He had performed an operation never before attempted in the history of the world, and with three successive good results, and yet he did not hasten to blazon it abroad!

A great deal has been said, and very properly said, concerning the

¹ Dr. James Johnson, *Med.-Chir. Rev.*, N. S. vol. v., Oct. 1826, p. 620.

² *Eclectic Repository and Analytic. Rev.*, April, 1817, p. 242.

fact that McDowell got the suggestion of ovariectomy from abroad, and only developed it afterwards in his own country. Even had McDowell never lived, America seemed destined to be connected with this great surgical triumph from its inauguration; for in July, 1821, Nathan Smith, then Professor of Surgery in Yale College, performed ovariectomy¹ entirely without the knowledge of the fact that he had been preceded by one of his own countrymen in 1809, and by a German in 1819.

The scope of this paper will not admit of a record of the names of the immediate followers of these surgeons; suffice it to say that before the year 1850 eighteen operators had successfully performed thirty-six operations, with twenty-one recoveries and fifteen deaths.

In England ovariectomy was never performed till 1836; in Germany it was first performed in 1819, and in France in 1844.

It will thus be seen that this operation, remarkable at once for its simplicity and efficiency, did not rapidly advance to a recognized place as one of the resources of surgery, but slowly and painfully overcame the prejudices and doubts of worthy men, and the misrepresentations of detractors. In effecting this result, America by no means stood alone. Nevertheless it was to Americans, the successors of McDowell, that it was in great part due. The names most intimately connected with the work are those of John L. and W. L. Atlee, Dunlap, Peaslee, and Kimball. To the Atlees too much credit in this regard cannot be accorded. Profoundly impressed with the importance and future usefulness of the procedure, they pressed onward in the work of establishing its claims with that dignified indifference to the criticisms of opponents which always characterizes successful innovators. They operated upon all suitable cases, when each venture insured a storm of censure; when every fatal result was cited in evidence of their recklessness; when persistence robbed them of the esteem of many whose good feeling they could not but value.

"On the 17th September, 1843," writes Alexander Dunlap, of Springfield, Ohio, "I performed my first ovariectomy, and carefully wrote out the case for publication, and sent it to a medical journal. They sent it back, with a note, stating that they could not publish the case of such an unjustifiable operation. I threw it into the waste-basket, determined to write no more for medical journals; but, being satisfied that I was right, to continue the operation. From that time, for a number of years, I was looked upon by most of the profession out west as a kind of an Ishmaelite in the regular profession in regard to surgery, and in that operation in particular. . . . I have now operated 106 times for ovariectomy (1876), with 27 deaths and 79 cures." Peaslee operated first in 1850 and Kimball in 1855.

Let it be borne in mind that these operators, with a few others, for a long time, stood almost alone. In those days it was as difficult to find a physician bold enough to sustain the operation as it now is to find one who dares decry it, and the wisest and most eminent surgeons of our country did not hesitate to declare,² "that in a few years the measure will be consigned to the oblivion it so richly merits." This, indeed, was a mild expression of disapprobation compared with many others from the best men in our ranks. Let us rather draw the veil over the exhibition of vituperation and personal abuse which disgraced the opposition, and

¹ Am. Med. Recorder, 1822, vol. v. p. 124.

² Liston and Mütter's Surgery, 1847, p. 422.

strive to forget that the bigotry and narrow-mindedness which endeavoured to crush the great discovery of Copernicus still lived in our day, to strive against ovariectomy. "Pride," says Sir William Hamilton, "has led men to close their eyes against the most evident truths which were not in harmony with their adopted opinions. It is said that there was not a physician in Europe above the age of forty who would admit Harvey's discovery of the circulation of the blood."

To-day, when ovariectomy is generally accepted as a valuable surgical resource, it is difficult for one to appreciate the reasons for the tardiness with which it overcame European prejudices, and forced its claims upon the notice and confidence of men who have since learned to accord to the procedure its true value. So entirely has this disposition on the part of trans-Atlantic surgeons been now overcome that a very general and, we are forced to say, a very reasonable feeling of surprise has been excited in America at what has seemed to be an inclination to ignore her indisputable rights in the matter.

"Till 1858," says an ovariectomist of Great Britain, as well known for his personal excellence as for his skill and success as an operator, writing as late as 1873, "I could find nothing whatever anywhere to encourage, but everything to deter one from attempting it. Ovariectomy was then, as an operation, simply nowhere."¹ This was a mistake. Ovariectomy since 1809 was somewhere; namely, in the land in which McDowell had performed thirteen operations with eight undoubted successes before 1830; W. L. Atlee² fourteen operations prior to 1851; J. L. Atlee³ double ovariectomy in 1843; and where over twenty-five other surgeons had removed ovarian tumours each one or more times prior to the year in which this eminent commentator began to discover the whereabouts of the procedure. The only extraordinary thing connected with the matter is that so important an operation could for almost an entire half century have so completely concealed its huge proportions from the ken of so acute an observer, and that too in a country teeming with medical periodicals and a nation not prone to hide its light under a bushel.

England, France, and Germany have each in turn been claimants of an operation, which after the most critical and thorough search stands fully accredited to America. "In faith, 'twas strange, 'twas passing strange," and yet 'twas true, that a surgeon of the Western wilds, with what Piorry once styled "*une audace Americaine*," stole a march upon the polished savans of the old world, as if in the silent watches of the night.

It is difficult to estimate the amount of good which this operation has bestowed upon humanity! Practised to-day in every civilized country in the world, yielding the statistics of seventy to seventy-five per cent. of recoveries, and daily being improved in its various steps, it may well be regarded as one of the greatest surgical triumphs of the century. "It may be shown," says Peaslee, "that in the United States and Great Britain alone, ovariectomy has, within the last thirty years, directly contributed more than thirty thousand years of active life to woman, all of which would have been lost had ovariectomy never been performed." To have done this even for one generation alone is glory enough for one mortal, and his country, apparently in recognition of this fact, leaves his

¹ Mr. Thos. Keith, Brit. Med. Journ., Dec. 20, p. 739.

² Am. Journ. Med. Sci., N. S., vol. xxix. p. 387.

³ Ibid., N. S., vol. vii. p. 44.

grave without a mark, and his memory to be preserved only in the hearts of the thousands of grateful women whom his genius has saved from death.

Should the day ever arrive in which the memory of McDowell shall be honoured by a monument, surely no one will deny to it the right to that inscription which declares upon the statue of Washington; he "has rendered his name dear to his fellow-citizens, and given the world an immortal example of true glory."

In the year 1816,¹ John King, of Edisto Island, South Carolina, performed one of the most remarkable operations for removal of an extra-uterine foetus ever placed on record. The case was one of abdominal pregnancy; the head presented in the pelvis, outside of the vagina; he cut through the walls of the latter, and applying the forceps, while abdominal pressure was exerted upon the child from above, had the rare good fortune to save both mother and child.

Towards the close of the eighteenth century there arose a man whose genius left its impress upon American obstetrics more decidedly than that of any other has done before or since. Decided in opinion, vigorous in expression, terse in argument, and trenchant in style, he did a great deal towards elevating the department to which he devoted himself. William Potts Dewees was born in 1768 and died in 1841, after a long and laborious professional career, during which he exerted a powerful influence as Professor of Midwifery in the University of Pennsylvania, and a writer upon obstetrics, gynecology, and pediatrics.

In after times it is impossible to estimate the degree of influence which has been exerted by such a man as Dewees. It is a matter of tradition only, and we can merely point to the *literæ scriptæ* which outlive him. He contributed a Treatise on the Diseases of Females (1826), which went to the tenth edition; a Treatise on the Physical and Medical Treatment of Children (1825), which reached the tenth edition; and a Comprehensive System of Midwifery (1824), which went into a twelfth edition. Of the last Prof. Hugh L. Hodge² declared "it takes a stand decidedly in advance of Denman, Osborne, Burns, and other English authorities in general use in our country at that period, and even of Baudelocque himself in throwing aside from his excellent system much that was useless, and, it may be said, imaginative."

Dewees had two able successors in Meigs and Hodge, both of whom reached old age in the active performance of their professional duties, and left indelible traces of their influence by reason of their strong intellectual qualifications, valuable literary contributions, and rare personal worth.

Charles D. Meigs was born in Bermuda in 1792, and commenced practice in 1815. For many years he filled the chair of obstetrics in the Jefferson Medical College of Philadelphia, and contributed largely to medical literature. His most important works were Woman, her Diseases and Remedies (1847); Obstetrics, the Science and Art (1849); a Treatise on Acute and Chronic Diseases of the Neck of the Uterus (1850); and on the Nature, Signs, and Treatment of Childbed Fevers (1854).

Meigs³ drew special attention to cardiac thrombosis as a cause of those

¹ Med. Repository, 1817, N. S., vol. iii. p. 388. See also "An analysis of the subject of extra-uterine foetation, and of the retroversion of the gravid uterus, by John King, Esq., of South Carolina." Norwich, 1818, 8vo. pp. 176.

² Memoir in Amer. Journ. of Med. Sci., Jan. 1843.

³ Med. Examiner, March, 1849, p. 141.

sudden deaths which occur in childbed, and which had generally been attributed to syncope. "I had noticed, on various occasions, the total want of any means of explaining such disasters," says he, referring to sudden deaths post partum, "and remained as much in the dark as my compeers, until I discovered that the incident depends most commonly on the sudden coagulation of the blood that occupies, for the time, the right auricle of the heart, and, in some of the cases, even that which is in the ventricle, and the pulmonary artery."¹

It has been remarked by an eminent American author that Meigs "just escaped the honour, which is now, and will hereafter be given to the eminent Virchow, of Berlin, of a great pathological discovery." Even admitting the truth of this statement, it is certainly well that the justice of the award should here be questioned. Meigs proclaimed the fact in no uncertain or wavering tones, but boldly, decidedly, repeatedly, and by every method. Why is the honour not his? What else could he have done to deserve it? Many of his countrymen will sympathize with the voice which speaks now, after death, in this unmistakable manner. "I have a just right to claim the merit of being the first writer to call the attention of the medical profession to these sudden concretions of these conrescible elements of the blood in the heart and great vessels." It may be said that he did not follow his discovery into detail as regarded secondary deposits of emboli. What of that? He does not claim to have done so. What he does claim is clearly and unquestionably claimed with justice.

The style of Meigs was peculiarly quaint and antique. Yet he possessed in a remarkable degree the power of fixing salient points upon the mind of the reader or listener, and burning into the memory the maxims which he deemed of greatest importance. Meigs died June 22, 1869.

Hugh L. Hodge practised in Philadelphia from 1818 to 1873, during which period he exerted a wide and decided influence as Professor of Obstetrics and Diseases of Women in the University of Pennsylvania, and as the author of a number of valuable works upon these and kindred subjects. His most valuable contributions to literature were *Cases and Observations regarding Puerperal Fever* (1833); *Diseases Peculiar to Women, including Displacement of the Uterus* (1860); *Principles and Practice of Obstetrics* (1864); and *Essays upon Syncytism of the Fœtal Head* (1870-71).² In his essays and lectures Hodge made prominent, by precept and illustration, the value of forceps as compressors in ordinary delivery, and after perforation; syncytism of the fœtal head; the importance of the induction of premature labour where even without pelvic deformity repeated fœtal deaths have occurred from premature ossification; the prophylactic influence of mechanical support in prevention of habitual abortion, and its efficacy in cases of uterine fibroid; and added to the *armamentarium obstetricum* "Hodge's Forceps," the instrument more generally used in this country than any other; a compressor cranii; a craniotomy scissors; and placental forceps—all attesting rare mechanical ingenuity.

For gynæcology Hodge accomplished much by the origination and development of two ideas which have already done a great deal of good, and will in the future do more than they have yet accomplished. The

¹ Treatise on Obstetrics, 5th ed., p. 352.

² Am. Journ. Med. Sci., Oct. 1870, p. 325, and July, 1871, p. 17.

first of these involved the recognition of the fact that that state of the uterus characterized by enlargement, tenderness, displacement, congestion, and hypersecretion is not "inflammation," and should not be treated as such; the second, that a double vaginal lever can supplement the exhausted uterine supports under these circumstances, and by sustaining the uterus give great relief to all these conditions. With regard to the first of these views, nothing more can be stated here than the expression of the belief that it constitutes one of the most important facts in uterine pathology. As to the second, something is necessary. Prior to the time when Hodge began a course of careful, laborious, and conscientious experiments upon the shape, material, uses, and varieties of pessaries (1830), these instruments had been used both in this country and in Europe. Indeed, even as long ago as the period of the Greek civilization they had been employed. But the disk, the globe, and similar instruments were badly contrived, did not depend upon any true mechanical principle, and accomplished little by comparison with what Hodge's improved instruments have since done. He introduced the philosophical double lever, gave accurate and precise rules for replacing and sustaining the displaced uterus by it, insisted upon every pessary sustaining itself against the vagina instead of against the rami of the pubes, particularly urged that after being placed both uterus and pessary should be movable in the pelvis, and thus brought a subject which had before belonged to the realms of empiricism into the precincts of science. Hodge's pessary is unquestionably the parent stem from which the host of excellent modifications now existing took their rise. It may safely be averred that he accomplished more for mechanical support of the uterus than any one has ever done before or since his time. He first constructed these instruments out of silver which was plated lightly with gold, but in time he used vulcanite or hard rubber entirely.

Hodge once gave to a friend this account of the consummation of the discovery of the lever pessary: "He had been contemplating for a long time the subject of new shapes for pessaries, and after many experiments had found nothing satisfactory. One evening, while sitting alone in the room where the meetings of the Medical Faculty of the University were held, his eyes rested on the upright steel support by the fireplace, designed to hold the shovel and tongs. The shovel and tongs were kept in position by a steel hook, and as he surveyed the supporting curve of this hook, the longed-for illumination came; the shape, apparently so paradoxical, revealed itself in the glowing light and flickering flame of the burning grate, and the Hodge lever pessary was the result."¹ A sudden effort of genius, was it? No: this was the moment at which the detached thoughts, long and carefully stored away in the inventor's mind, combined to form a harmonious whole. The steel hook did for his mind what the swinging church lamps did for that of Galileo in suggesting the pendulum.

Henry Miller was born in Kentucky, in 1800, commenced practice in 1821, and published a work upon Human Parturition in 1849, and upon the Principles and Practice of Obstetrics in 1858. He was for a long period Professor of Obstetrics and Diseases of Women in the University of Louisville, and both as teacher and writer decidedly influenced the department to which he devoted his energies. We owe to him the

¹ Discourse Commemorative of H. L. Hodge, M.D., by R. A. F. Penrose, M.D. Phila., 1873.

method of making the application of fluid caustics to the cavity of the body of the uterus by saturating with them a cotton wrapped rod or probe, and he was among the first to adopt the use of the speculum uteri in the great West; and the first to employ in that part of our country anæsthesia in midwifery.

In 1819 the chair of obstetrics in the College of Physicians and Surgeons of New York was filled by one who will long be remembered for his eloquence, erudition, and rare geniality—John W. Francis. Unfortunately for the department which now engages our attention, Dr. Francis turned his literary efforts in the direction of general medicine, literature, and pathology. Little remains to us of his obstetrical writings except his copious annotations of Denman's *Midwifery*, which he edited in 1821. A perusal of these makes one regret that he did not leave behind him more extensive contributions to this department embodying more of his large experience and acute observation.

The next systematic writer upon this department in the United States was Gunning S. Bedford, who practised in New York from 1830 to 1868; was for over twenty years Professor of Obstetrics in the University Medical College, and published a work on *Diseases of Women and Children* in 1855, and another on the *Principles and Practice of Obstetrics* in 1861.

In the year 1841, Bedford established, in connection with the University Medical College of New York, the first clinic for the diseases peculiar to women ever held in this country. This he maintained with great ability, energy, and enthusiasm, and from it he gleaned the material for a work which created a very decided sensation both in this country and in Europe. This clinic, under the care of his able successors, Charles A. Budd and M. A. Pallen, still exists. But it has been the parent of many other similar ones not only in New York but throughout our country. No medical school, indeed, is now considered complete without such a sphere for the instruction of students, and a vast deal of good has resulted from his move in this direction.

Thus far this essay has chiefly dealt with the labours of those of a past generation who, in the early part of the century, sustained the department of which we write; and the careers as well as the works of individuals have been noted. From this point we are called upon to undertake the more delicate and far more difficult task of dealing with the labours of our contemporaries. The chief reason for the difficulty and delicacy of this duty grows out of the fact that nothing is harder than to arrive at a just appreciation of the merits of contemporaries, more especially on the part of those labouring in the same field. Prejudice, personal bias, and that tendency which all men feel to undervalue what is at their own doors, and exalt that to which distance lends enchantment, all combine to defeat a just, fair, and generous estimate. Then, too, the umpire, however conscientious and unprejudiced he may be, lacks the great assistance which the test of experience alone can give in deciding as to the value of new procedures and the credit which should be accorded to their discoverers. He has not the opportunity of learning the verdict of time as to what is and who are the fittest to survive; of that "wise beneficent law by which the improvement and perfection of the human race alone can be secured; that law in consequence of which the best specimens of a species survive, and become the progenitors of generations more perfect than those preceding them." The only feelings which can sustain him who makes the effort and render him impervious to

the shafts of criticism, is an abiding faith in the rectitude of his intentions, and in the sincerity of his efforts to render to every man, without prejudice or favour, what he honestly regards as his just dues.

The plan which suggests itself as best is to notice, 1st, the original discoveries which have proved of greatest practical value; 2d, the most striking and important contributions to periodical literature and systematic works upon the subject; 3d, instruments and mechanical contrivances of greatest importance.

In the year 1841 a most important contribution was made to the treatment of peritonitis by Alonzo Clark,¹ of New York, in the introduction of the plan now known as the "opium treatment." In the spring of that year Dr. Clark saw several cases of this disease treated by Armstrong's method—a full bleeding, and a full dose of opium, to prolong the effects of the bleeding. He was impressed with the idea that opium was the curative agent, not the bleeding. In the next three years he treated all the cases he met on that idea, giving opium, or an opiate, in full and frequent doses, and nothing else. The result was that just eight out of nine cases were cured. A success very encouraging, but not quite so marked, attended the similar, subsequent use of the drug. With this experience he resolved to give it a trial in puerperal peritonitis. The opportunity, however, did not occur till 1848. The first trial was successful, the patient taking 100 grs. of opium in four days. Between that date and 1852 nothing occurred that was decisive regarding the merits of the plan. But in the latter year an epidemic of puerperal fever occurred at Bellevue Hospital, in which the exclusive opium treatment was fully tested by him. In the first case it failed, or rather through the timidity of the House Physician, it was not tried—only three grains of opium were given in twenty-four hours. A few days later four cases came under his care at once. He assigned them to another member of the House Staff, a man of more decided character, now a distinguished surgeon and sanitarian, with detailed instructions. All of these were cured. It was in the course of this outbreak that the opium treatment for puerperal peritonitis was shown to be the best that had then, or has since, been proposed. This physician assisted in the treatment of puerperal fever in the same hospital twelve years earlier, in which, out of thirty attacked, twenty-nine died. Nothing was then known of the antiphlogistic power of opium.

The quantity of opium, or one of its alkaloids, required to subdue and control the inflammatory process varies greatly. In some cases two grains of powdered opium every two hours answers the purpose, while in others eighty drops of Magendie's solution (xvj grs. of morphia to one ounce of water) every two hours for six or seven doses are required. Dr. Clark records a case in which the patient took during "the first twenty-six hours, of opium and sulphate of morphia, a quantity equivalent to 106 grains of opium; in the second twenty-four hours she took 472 grains, on the third day, 236 grains, on the fourth day, 120 grains, on the fifth day, 54 grains, on the sixth day, 22 grains, and on the seventh, 8 grains."

By this system a tolerance of the drug is rapidly effected, pain is annihilated, nervous and mental disquietude relieved, and the most satisfactory results commonly attained. While it is put in practice, however, a physician should constantly remain by the bedside to detect the devel-

¹ New York Journ. of Med., Jan. 1858, p. 82; and Ramsbotham's Syst. of Obstetrics, Am. ed., Phila., 1855, p. 533.

opment of dangerous narcotism, and combat it by appropriate means. It is surely not claiming too much for Clark's method to assert that it surpasses in efficacy all others which have yet been made known to the profession.

In 1844, Dr. J. C. Nott,¹ of Mobile, published a case of "coccygeal neuralgia," in which he practised extirpation of the bone, which proved to be carious, with entire relief to his patient. This was the first time that either this disease or its remedy had been described. At a later period Sir James Simpson, not knowing of Nott's essay, described the disease under the name of coccydynia or coccygodynia, and advocated the same method of treatment.

Although a decided impulse was given to gynæcology by the introduction of the speculum by Récamier, a great need was felt of something which would expose the uterus and vagina to more complete and satisfactory investigation. For want of this the cure of vaginal fistulæ had thus far proved impracticable, and many operations upon the uterus itself difficult of accomplishment. In 1852 there appeared an article from the pen of a hitherto unknown author, which changed all this, and threw a flood of light into dark places. This was an essay upon vesicovaginal fistula, by J. Marion Sims,² then of Montgomery, Alabama, in which he introduced a speculum which developed a new principle of examination of the uterus and vagina. The discovery of a method of cure for vaginal fistulæ was a great stride onward, but the method of examination by retraction of the perineum and posterior vaginal wall, while the body of the patient is so placed as to secure distention of the vagina by air, has served to give to gynæcology an impulse second in importance only to that given by Récamier. Récamier's discovery lifted this department from the field of speculation to that of science. Sims has served to advance it very greatly beyond the point which it would have occupied if reliance were still placed upon previous methods.

Important discoveries are not made suddenly as if by one leap on the part of some great intellect. They are arrived at slowly, step by step, and by the workings of many minds; as many unseen influences slowly mature a harvest which in due time falls to one sickle. The inspiration of discoverers is the offspring of the times in which they live; such men are exponents of the mental workings of their period, mouth-pieces of the civilization which developed them. The resultant of the premises evolved from ten great minds of one decade are often combined in the deductions of a single genius in another. Hence it is that discoveries are often simultaneously made in various parts of the world by men who have had no communication with each other, and that their origination is invariably disputed by rival claimants. Morse discovered the telegraph, but ever since Franklin's kite brought down the lightning from the skies, many others had been preparing the way for him. Wells discovered anæsthesia, but for many years before, school-boys had for their amusement been painlessly bruising themselves under the influence of laughing-gas, never dreaming that the means of securing unconsciousness of pain which they adopted would one day become systematized and utilized as a great boon to humanity.

These remarks find no more perfect illustration in the discoveries of

¹ New Orleans Medical Journal, May 1844, p. 58; and Am. Journ. Med. Sci., Oct., 1844, p. 544.

² American Journ. Med. Sciences, Jan. 1852, p. 59.

surgery than that of the cure of vesico-vaginal fistula. The writings of the Greek, Roman, and Arabian schools of medicine are singularly silent with reference to an accident which has a striking faculty of pressing itself upon the attention, and must have been very common before the days of the Chamberlaynes. From the times of Paré, however, it attracted the special care of surgeons, and year after year efforts were made to close these small, but important, lesions. It would take too much space to tell of the efforts of Paré, Roonhuysen, Vœlter, Fatio, and many others; suffice it that at the beginning of the nineteenth century nothing had been accomplished. In the eighteenth, however, "coming events cast their shadow before," and the glimmer of the dawn became visible in the operations, and occasional successes of Desault, Naeglé, Schreger, Lallemant, and Roux. In 1834 Gossett, of London, absolutely discovered the method of cure, and, his labours being forgotten, Metzler, of Prague, in 1846, again did so. And now, too, Hayward and Mettauer, of this country, began to get good results. But sporadic, desultory, haphazard results mark a different era from systematic and certain ones, and the matter may be said to have been really little advanced till Marion Sims published to the world his method of treating these accidents, which was at once so simple and systematic as to place the procedure at the disposal of every surgeon.

No more forcible comment can be made upon the perfection of Sims' procedure than the mere citation of the fact that even now it stands, for the great majority of surgeons, virtually unaltered, and as simple in details as when it left the master-hand.

Various modifications have been suggested both in this country and in Europe. Chief among these are the clamps of Battey, Atlee, and Bozeman. The last of these only deserves special mention on account of the excellent results which have been obtained with it by its originator, Nathan Bozeman. This operator, who was the earliest to follow Sims in this field of surgery, and who has devoted himself to it with an earnestness which has been surpassed by that of no other, has always preferred a modification of the knee-elbow position to that on the side, and has approximated the pared edges of the fistulous orifice by passing his sutures through a leaden shield, or, as he styles it, a "button suture." By this method very gratifying results are obtained, and after an experience of more than twenty years with it, its originator still employs it with confidence in its advantages over the suture alone.

The medical profession in New York, recognizing the value of Sims' discoveries, warmly endorsed an effort on his part to establish a Woman's Hospital in that city, where, thanks to the well-known generosity of its citizens, such an institution was founded in 1855. From this institution, through the labours of Sims and his able coadjutor Thomas Addis Emmet, a great deal has emanated for the advancement of gynæcology. To these two men a great deal of credit is due for establishing and disseminating an exact and systematic method in the study of the diseases of women. The greater facility afforded for operations upon the vagina and uterus by Sims' method of examination, has accomplished an improvement in all such procedures, and these two operators, who were first in the field with this advantage on their side, have been greatly instrumental in this result. Operations upon the perineum, upon fistulæ, upon constricted and tortuous uterine necks, upon voluminous and atonic vaginæ, have all felt this influence. Posterior instead of lateral section of the cervix for

anteflexions of body and neck, is a good example of such an improvement as has been thus effected.

Until the establishment of Marion Sims as a specialist in diseases of women in New York about the year 1852, no one in this country had heretofore devoted himself to this department to the exclusion of general practice. By him and by T. A. Emmet and H. R. Storer more than any others, this practice was established. That a great deal of good has resulted from the devotion of able minds to the special investigation of this subject, no candid observer can doubt. And yet every thoughtful man who wishes well to the department, must view with concern the unwise haste with which young practitioners, who have had neither time nor opportunity to acquire experience in general medicine, strive to devote themselves to it. Can it ever be that he who knows little of the management of the diseases which affect the peritoneum, stomach, lungs, and liver, can deal efficiently with the disorders of an organ or set of organs which are especially affiliated with them in all their variations of disease, in all their physiological functions? He who deals efficiently with the whole, may in detail deal with all its parts, but he who learns to deal with a part alone, can never be equal to coping with the whole.

Before the introduction of Sims' method of uterine examination, the use of the vaginal tampon, the most important of all hemostatic means in connection with the non-pregnant uterus and with this organ up to the fifth month of pregnancy, was difficult, painful, and unreliable. The introduction of a silk handkerchief, a kite-tail tampon, a mass of cotton, a muslin bandage, and all similar materials, was very unsatisfactory. The most perfect facility and efficiency attend tamponing the vagina with wet cotton while the patient lies upon the side, and the vagina is dilated by means of the duck-bill speculum. Pieces of cotton soaked in water, pressed and flattened out by the fingers, each about the size of a very small biscuit, are pressed into the vaginal cul-de-sac by means of forceps till this is filled. Then other pieces are packed firmly around the cervix until only the os is visible—a smaller pad is then pressed firmly against or introduced within the cervical canal, and the whole vagina is then filled to its lowest portion.

At a meeting of the American Medical Association in 1853, a prize was awarded to a very remarkable and valuable essay by Dr. W. L. Atlee,¹ entitled, "The Surgical Treatment of Certain Fibrous Tumours of the Uterus heretofore considered beyond the resources of Art." In this Dr. Atlee advocated the removal, by enucleation, of tumours which up to this time were looked upon as incurable, and by his brilliant results he led the way to a plan of treatment which has been productive of a great deal of good. His plan of treating these growths is now very commonly adopted by practitioners who appear to forget to whom the heroic and life-saving method is due. Even as early as 1850, Prof. Mussey of Ohio remarked, "Of all the achievements of modern surgery, we meet with none more striking or extraordinary than the operations performed by Professor Atlee for the removal of intra-uterine fibrous tumours."

In 1854, a gold medal was awarded by the Ohio State Medical Society to Dr. M. B. Wright of Cincinnati, for an essay entitled "Difficult Labours and their Treatment." In this essay the operation of bimanual version was so fully, so clearly, so unmistakably described, that it is difficult to understand how many of his countrymen could have since per-

¹ Trans. Am. Med. Association, 1853, vol. vi. p. 547.

mitted themselves to style the procedure by any other name than "Wright's Method." An examination of the written testimony bearing upon the subject, certainly seems to give endorsement to the following claim on the part of Wright.

"I claim the credit, if credit there be, of having first suggested to the profession, and demonstrated in practice, the value of bimanual version."¹

It must be understood that Wright neither claims nor deserves the credit of the discovery of bimanual version as a procedure, but only that of the method of its performance. Flamand long before him described cephalic version by this method, but Wright improved upon and simplified the procedure. This is Wright's description of his plan :—²

"Suppose the patient to have been placed upon her back, across the bed, and with her hips near its edge—the presentation to be the right shoulder, with the head in the left iliac fossa—the right hand to have been introduced into the vagina, and the arm, if prolapsed, having been placed, as near as may be, in its original position across the breast. We now apply our fingers upon the top of a shoulder, and our thumb in the opposite axilla, or on such part as will give us command of the chest, and enable us to apply a degree of lateral force. Our left hand is also applied to the abdomen of the patient, over the breech of the fœtus. Lateral pressure is made upon the shoulders in such a way as to give to the body of the fœtus a curvilinear movement. At the same time, the left hand, applied as above, makes pressure so as to dislodge the breech, as it were, and move it towards the centre of the uterine cavity."

All controversial topics should be avoided in an essay like the present, but it would be discourteous to a distinguished English obstetrician not to note the fact that he has doubted the claim of Wright to originality in this matter. In a letter published in the *Amer. Journ. of Obstetrics*, etc., for Feb. 1873, Dr. Braxton Hicks, of London, says :—

"Now the distinctive point of the plan I have introduced was just this, that *both hands are used together*, one supplementing the other, so that when the internal hand began to lose power the external one would begin to gain power, and *vice versa*. This principle was applied by me to both partial and complete version, and it is (as far as I have been able to discover) a curious fact that in the practice of neither German nor other obstetricians has the use of the two hands simultaneously been described. The only use of the outside hand has been hitherto to steady the uterus to prevent recession. This character it is which Dr. Richardson³ has overlooked, and it is for this that I am desirous of claiming for *myself* whatever of originality it possesses."

This claim is perfectly clear, and can be answered without difficulty or circumlocution. Wright says "at the same time the left⁴ hand, applied as above, makes pressure so as to dislodge the breech, as it were, and move it towards the centre of the uterine cavity." Surely no one can suppose that this means that the left hand merely steadies the uterus. Cazeaux declares that Flamand got hold of the head with the hand in the vagina, "if the efforts made by the other hand through the abdominal walls, have not proved sufficient to make it descend into the excavation."

There is no question as to the fact that Dr. Hicks has done a great deal of good in simplifying podalic version by this method. But the exten-

¹ Letter to the author of this review in Jan. 1876.

² Trans. Ohio State Med. Soc., 1854, p. 82.

³ Who maintains Wright's claim.

⁴ The right hand is in the vagina.

sion and utilization of a method is not here at issue; it is the origination of the principle which is in question.

Even had Wright not made this advance, it seemed destined to be made in America, for in the next year Penrose,¹ of Philadelphia, in an article entitled "Cephalic version in shoulder presentations, with the arm in the vagina," described bimanual version without a knowledge of the fact that he had been anticipated by Wright.

During the course of the same year a very valuable contribution was made to the treatment of septicæmia following ovariectomy, by E. R. Peaslee,² of New York. His method was the introduction of a catheter or similar tube into the peritoneal cavity and boldly washing out this serous sac, interference with which had for all time been regarded with so much dread. Experience with the plan, extended now over a period of twenty years, stamps it as a reliable method of meeting one of the most dangerous consequences of this grave operation, and corroborates the high estimate which was put upon it in the early days of its existence. Unquestionably many lives have been saved by a timely resort to it. In one of Peaslee's early cases the use of intra-peritoneal injections was kept up for fifty-nine days, and in another for seventy-eight days. In both of these cases recovery took place as a reward for the prolonged and persevering efforts of the fearless innovator.

In 1856, Sims made known his operation for narrowing the vagina for the cure of prolapsus uteri. In this he had been anticipated by Dieffenbach, Heming, and other Europeans, but his method was an improvement over others, and was a revival of what had fallen into almost entire disuse.

In the same year,³ Dr. James T. White, of Buffalo, reduced by taxis an inversion of the uterus of eight days' standing. In his report of this case he took occasion to predict that the profession would soon alter its views with regard to the practicability of reposition in chronic cases, a prophecy which was happily fulfilled, in great degree in consequence of his own labours, two years afterwards.

Daillez,⁴ who published a thesis upon this subject as early as 1803, reported a case of reduction by taxis as late as the eighth month after occurrence of the accident; another is reported in 1847; and even as late as 1852, Canney and Barrier are declared to have accomplished it. But the plan was not systematized and placed upon the basis of a recognized and legitimate procedure until 1858, when White of Buffalo, and Tyler Smith of London, simultaneously replaced uteri in the condition of chronic inversion, and gave to the procedure the position of a standard operation.

Up to the present date White has successfully reduced by taxis twelve cases, extending from seven months to twenty-two years in duration.

In 1858, Gaillard Thomas⁵ published an essay upon the treatment of prolapse of the funis by gravitation developed as a remedial measure by placing the patient in the genu-pectoral position. This plan, which it appears had been formerly in use, had been so entirely lost sight of, that for ten years after its introduction by him, the fact of

¹ Medical Examiner, July, 1855, p. 405.

² Am. Journ. Med. Sci., April, 1863, p. 355, and July, 1864, p. 47. See also Amer. Journ. Obstet., 1870, vol. iii. p. 300.

³ Buffalo Med. Journ., vol. xi. p. 596.

⁴ Colombat, Dis. of Women, Am. ed., p. 186.

⁵ Trans. of N. Y. Acad. of Medicine, vol. ii. p. 21.

its previous existence was not known. Since the time of his article it has come into general use as the most rational and simple method of treating this accident during the earlier stages of labour.

The intractable nature of, and extreme distress attendant upon chronic cystitis, are too well known to require mention. For a long time the attention of American surgeons has been directed to the relief of this condition by surgical means. In 1846,¹ Willard Parker created a recto-vaginal fistula in the male for the removal of a stone, and being struck by the relief afforded to a cystitis which existed, he subsequently repeated the operation for the relief of the latter condition in men between that time and 1867, when he read an essay upon the subject before the New York State Medical Society. "The object in view," says he, "was to open a channel by which the urine could drain off as fast as secreted, and thus afford rest to the bladder, the first essential indication in the treatment of inflammation." In 1867, Paul F. Eve followed Parker's example in thus operating upon the male. But in 1861,² Nathan Boze-man applied the procedure to the female bladder with the result of curing chronic cystitis.

Without a knowledge of any of these facts the same idea suggested itself to the minds of Sims and Emmet³ as early as 1858, and at a later period, 1861, the latter of these gentlemen, at the suggestion of the former made three years before, practised the operation for chronic cystitis in the female. Although the origination of the method does not belong to Emmet, to him is justly due the credit of having systematized the procedure, and placed it upon the basis of a recognized surgical resource. Whether it is destined to give way before the less serious procedure of distending the urethra, and thus establishing incontinence of urine, time will prove. That it is in itself a most valuable operation, no one can doubt who has seen the relief afforded by it to women nearly exhausted by ceaseless vesical tenesmus, loss of sleep, and nervousness.

In Smellie's⁴ *Collection of Preternatural Cases and Observations in Midwifery*, vol. iii. p. 232, will be found evidence of the fact that that great obstetrician recognized the value of gravitation, developed by placing the patient in the genu-pectoral position, as an aid to the operation of podalic version. He mentions his having repeatedly resorted to this posture in performing version, but does not claim originality for it, as he styles it "Daventer's method." The first case in which Smellie resorted to it occurred in 1753. In Wright's pamphlet, already alluded to, published in 1854, and entitled "Difficult Labors and their Treatment," the following passage occurs on page 23: "The hand can be more readily introduced into the uterus, and the feet reached, however, with the patient on her elbows and knees, than when on the back or sides. There may be cases, in which advantage would be gained, by placing the patient in this position, preparatory to cephalic version."

It will be observed that Smellie resorted to the knee-elbow position as an adjuvant to podalic version, and that Wright very cautiously offers it as a mere suggestion. To P. R. Maxon, of Syracuse, N. Y., belongs the credit of having established the claims of this method in the performance of cephalic version in cases of transverse presentation. He thus

¹ Transact. of N. Y. State Med. Soc., 1867, p. 345.

² Ibid., 1871, p. 326.

³ Amer. Practitioner, Feb. 1872, p. 65.

⁴ Ibid., Jan. 1876, p. 59.

describes the procedure in the case of a lady who had previously lost three children by podalic version.

“Remembering the fate of the other children, and finding this one very large, I suggested the feasibility of correcting this shoulder presentation in the same manner as I had corrected the abdominal in the first instance. With his (the attending physician’s) consent, I made the effort in the following manner: I folded several quilts compactly, laying them upon one another to the height of about one foot, and assisted her to kneel upon the quilts with her head and shoulders resting upon the bed and her face forwards, so as to bring her body to an angle with the bed of nearly 90°. I then pressed my hand gently against the shoulders, which readily receded, until I was enabled to clasp the vertex with my fingers, and with the assistance of the next pain to so “engage” it that, when the patient was placed upon her left side and the quilts removed, a perfectly natural presentation presented itself. In a few hours the labour terminated in the delivery of a healthy boy, weighing ten pounds.”

No one who has not resorted to Maxon’s method can appreciate the great facility with which a shoulder or even an arm presentation may be altered into one of the vertex; and no one who has done so will doubt the great value of the plan. Of course, after the amniotic fluid has been long evacuated, and the uterus has firmly clasped the foetal body, such a change will often prove impossible; but in many cases, before this unfortunate chain of circumstances has occurred, the operation of podalic version with all its serious consequences to mother and child may be avoided, and a natural parturition be substituted for an unnatural one.

In 1861¹ Sims described the disease known as vaginismus, which had, however, been previously noted by Burns, Simpson, Debout, and several others, and recommended for its relief a procedure which, while it involves little risk to the patient, insures a certain removal of the disorder. This consists in ablation of the remains of the hymen and section of the tissues at the perineal extremity of the ostium vaginae.

Several European authorities have advocated in preference to this plan forcible distention of the ostium vaginae and modification of the local nervous hyperæsthesia by alterative applications. A comparison of the two methods at the bedside will be greatly in favour of the former.

In 1862² E. Noeggerath, of New York, proposed and practised the method of reduction of an inverted uterus by digital compression of both horns. He based this procedure upon the pathological fact that *inversio uteri* generally begins by inversion of the horns. Experiment proves the method of Noeggerath to be a valuable and reliable one, which should rank among the important contributions which have been made to this subject.

In 1867³ Theophilus Parvin described an operation for uretero-vaginal fistula, a condition which had previously attracted little attention. This consisted in first turning the displaced distal extremity of the ureter into the bladder, and then closing the vaginal opening. The case reported was the first of this kind upon which the operator had essayed the method, and it proved entirely successful.

In 1868⁴ a valuable suggestion, illustrated by a case, was made by T. A. Emmet for the management of cases in which partial success attends reposition of an inverted uterus. This consisted in keeping the

¹ Trans. Obstet. Soc. London, vol. ii. p. 356.

² Bulletin N. Y. Acad. Med., vol. i. p. 410.

³ Western Journ. of Med., vol. ii. p. 603.

⁴ Am. Journ. of Med. Sciences, January, 1868, p. 91.

partially replaced body within the cervix by closing the os externum uteri by silver sutures. By this method the advance gained at one sitting is not lost, and the case is better prepared than it would otherwise be for further efforts.

In 1869¹ Julius F. Miner, of Buffalo, made a valuable contribution to the management of the pedicle of tumours removed by ovariectomy. His method consisted in stripping off from the tumour the expansion of the pedicle instead of ligating and severing it. In many cases Miner's method is of inestimable value, and allows of a successful issue to cases which would otherwise prove exceedingly difficult if not impossible of management.

J. Marion Sims² in the same year published an important essay entitled the "Microscope in Diagnosis and Treatment of Sterility." His observations bore especially upon the deleterious effects exerted upon the vitality of the zoospers by ichorous discharges from the endometrium. Treatment, of course, was to be directed to the eradication of the disorder which gave rise to this devitalizing secretion.

In 1870³ Gaillard Thomas performed the operation of vaginal ovariectomy, removing an ovarian cyst the size of a large orange through an opening made through the vagina and Douglas's pouch. This was the first time that this procedure was ever advised or practised for this purpose. His patient recovered.

In 1872⁴ R. Davis, of Wilkesbarre, Pa., in the same manner successfully removed an ovarian cyst weighing nine pounds. In rupturing adhesions, which were abundant, his hand was passed high up into the peritoneal cavity, the sac extending several inches above the umbilicus, and forming a tumour about the size of a pregnant uterus at seven months of utero-gestation. His patient recovered.

In 1873⁵ J. T. Gilmore, of Mobile, Ala., performed the same operation successfully. The temperature of his patient never rose to 100° F.

In 1874⁶ Robert Battey, of Atlanta, Ga., removed in the same way a cyst the size of a small orange. The patient rapidly recovered.

By the same method, Battey has nine times extirpated the ovaries in pursuance of a plan which will now be mentioned, and Marion Sims has done so three times.

In 1872 Robert Battey⁷ published an essay advocating extirpation of the ovaries with the intent of prematurely inducing the menopause in cases in which menstruation is productive of very bad results. To use his own words, it is "an operation for the removal of the normal human ovaries, with a view to establish at once the 'change of life,' for the effectual remedy of certain otherwise incurable maladies."

Too short a time has thus far elapsed for this bold innovation to have received its just estimate. It is not saying too much, however, even now to declare that its future will probably be one of a great deal of usefulness when it has been circumscribed by proper limits and the class of

¹ Buffalo Med. and Surg. Journ., June, 1869, p. 418. See also American Journ. Med. Sci., Oct. 1872, p. 391.

² N. Y. Med. Journ., January, 1869, p. 393.

³ Amer. Journ. Med. Sciences, April, 1870, p. 387.

⁴ Trans. State Med. Soc. of Penna., 1874, p. 221.

⁵ N. O. Med. and Surg. Journ., Nov. 1873, p. 341.

⁶ Personal communication.

⁷ Atlanta Med. and Surg. Journ., Sept. 1872, p. 321.

cases to which it is appropriate has been clearly defined. Thus far Battey's operation has been practised in the United States

by Robert Battey	10 times.	8 recoveries.	2 deaths.
" Marion Sims	5 "	4 "	1 "
" Gaillard Thomas	1 "	1 "	0 "

Battey¹ thus expresses himself concerning some of the important points connected with this subject:—

"I have operated in widely different circumstances. In one case the patient had amenorrhœa, convulsions, recurrent hematocele, repeated pelvic abscesses, incipient tuberculosis from pulmonary congestions, etc. Several of the cases passed under the head of ovarian neuralgia; several had intractable dysmenorrhœa with pelvic deposits of old lymph; one had ovarian insanity, etc. All had exhausted the available resources of the art to no useful purpose. *I operate upon no case that any other respectable medical man proposes to cure.* In most of my cases the full results of the menopause have not yet been developed. This is the work of many months, and sometimes two or three years are necessary to its full and perfect realization. In no case has the patient failed to realize such a degree of relief and benefit following the operation as to amply compensate her for all the pains and dangers incident thereto, to say nothing of the promise of full and ample recovery at the completion of the physiological 'change.' In two of my cases this *change* has seemed to occur at once in all its completeness; but it is always my expectation that it will occur gradually, and extending through two or even three years to its final completion. In my first case (now three years ago) the restoration to health is eminently satisfactory. It is true that she is not absolutely and perfectly well, but she is fully relieved of the convulsions, the violent periodical congestions, the hematoceles, the pelvic abscesses, etc., for which I operated. I submit to you the question in all sincerity, if I confine myself to cases where life is endangered, or where health and happiness are destroyed—cases which are utterly hopeless of other remedy this side the grave—ought the profession to demand at my hands the restoration of these forlorn invalids to a state of complete and absolute health in every particular?"

In 1873² John Ball, of Brooklyn, published the results of a plan of treating constrictions and tortuosities of the canal of the cervix uteri resulting from versions and flexions, by rapid dilatation, by expanding instruments of steel. Ellinger, of Germany, has likewise adopted this heroic method, but Ball declares that he has employed it for several years, and without the knowledge that any one else was testing it. The procedure is thus described by its originator:—

"My method of procedure is first to evacuate the bowels pretty thoroughly beforehand, so as to prevent all effort in that direction for two or three days; I then place the patient upon her back, with her hips near the edge of the bed, and, when she is profoundly under the influence of an anæsthetic, I commence by introducing a three-bladed, self-retaining speculum, which brings in view the os uteri, which I seize with a double-hooked tenaculum, and draw down toward the vulva, when I first introduce a metal bougie as large as the canal will admit, followed in rapid succession by others of larger size until I reach No. 7, which represents the size of my dilator. I then introduce the dilator, and stretch the cervix in every direction, until it is enlarged sufficiently to admit a No. 16 bougie, which is all that is generally necessary. Then I introduce a hollow, gum-elastic uterine pessary, of about that size, and retain it in position by a stem, secured outside of the vulva, for about a week, in which time it has done its work, and is ready to be removed.

¹ Amer. Practitioner, Oct. 1875, p. 207.

² N. Y. Med. Journ., Oct. 1873, p. 363.

"During this time I keep the patient perfectly quiet, and usually upon her back, which is generally found to be the most comfortable position."

To the uninitiated this procedure appears fraught with great danger, but the originator declares that out of between twenty and thirty cases he has met with but one fatal issue. He says:—

"According to my own experience, it causes much less constitutional disturbance than the use of tents; and I think it safer even than the metrotome, and free from some serious objections to the use of the latter; as, for instance, when incisions are made through the tissues of the cervix, unless carried deep enough to prevent reunion, they must of necessity form a cicatrix, which will interfere, more or less, with the dilatation of the parts. And, when the operation does not succeed, the patient is left in a worse condition than before; while, in the rapid and forcible dilatation of the cervix, there is no sacrifice of the integrity of the parts, and, being done under the influence of an anæsthetic, there is no shock of the nervous system, and generally but little subsequent suffering."

In 1874 an important contribution to the pathology and treatment of diseases of the cervix uteri emanated from T. A. Emmet.¹ It had long been known, that, as the head of the child passed the os externum uteri, lacerations of its muscular walls often occurred; but up to this time it had not been recognized how uniformly this condition is confounded with the so-called ulceration of the cervix, and how commonly the eversion of the lips of the cervix resulting from it is mistaken for hypertrophy of the cervical tissues. Emmet advocated for this condition vivification of the edges of the lacerated parts, and approximation of them by suture. This procedure is one of most beneficent character, and one which must take rank as an important advance in gynæcological surgery.

The medical literature of the first quarter of the present century contains several allusions to an operation styled gastro-elytrotomy, a procedure intended to avoid cutting through the uterus and peritoneum, and yet allowing of the removal of the child through the abdominal walls and above the true pelvis.

This operation has attracted the attention of four obstetricians: Jorg in 1806, Ritgen in 1820, Physick in 1822, and A. Baudelocque in 1823. Kilian, in speaking of Jorg's conception of the operation, says that he merely suggested it; and even if he had performed it, his results would not have been admitted in a fair appreciation of the operation, since he did not propose avoiding the peritoneum, a prominent feature of the method. The same writer alludes to one operation by Ritgen which ended fatally. In 1870, Gaillard Thomas, without a knowledge of the fact that he had been anticipated in the procedure, delivered in this way a living child. The operation was at that time thus described by him:²—

"The patient being placed upon a table, anæsthesia was produced, so as to quiet her restlessness and jactitation, with a few inhalations of ether. I then passed my hand up the vagina and dilated the cervix slowly and cautiously, so that at a three-quarter distention no injury was done to its tissue. With a bistoury I then cut through the abdominal muscles, the incision being carried from the spine of the pubis to the anterior superior spinous process of the ileum. The lips of the wound were now separated, and by two fingers the peritoneum was lifted with great readiness, so that the vagino-uterine junction was reached. The vagina was now lifted by a steel sound passed within it, and cut, and the opening thus made was enlarged by the fingers. The cervix was

¹ N. Y. Med. Journ., July, 1874.

² Amer. Journ. Obstet., vol. iii. p. 125.

then lifted into the right iliac fossa by the blunt hook, while the fundus was depressed in an opposite direction. I then passed my right hand into the iliac fossa, and introduced two fingers into the uterus, while the left hand, placed on the outer surface of the uterus, depressed the pelvic extremity of the foetal ovoid. The knee was readily seized, and delivery easily and rapidly accomplished."

In 1876,¹ Alexander J. C. Skene, of Brooklyn, performed this operation with a brilliancy of result never before attained by any one. The patient was a small rachitic woman, aged thirty-one years, who had been three times delivered, once by craniotomy and twice by premature delivery at the seventh and eighth months. One of the last two children had lived a few minutes, and one for several months. In her fourth pregnancy Dr. Skene let gestation advance to full term; then, finding an arm and the cord presenting, he performed gastro-elytrotomy, saving the mother and a vigorous child weighing ten pounds. Both made a perfect recovery.

This completes the list of those contributions to obstetrics and gynæcology on the part of this country which appear to be especially marked by originality and by practical utility. But how difficult is it to decide what really deserves the credit of original conception? "Is there anything whereof it may be said—See, this is new? it hath been already of old time which was before us. There is no remembrance of former things." As the husbandman turns up to the light and brings into activity and usefulness the mould which, though buried for ages, was in by-gone times ploughed by his predecessors, so do the seekers after new ideas bring to light the thoughts of those whose discoveries have been long ago forgotten. Who is to decide how long a time must intervene between the periods of successive discovery to warrant for the latest aspirant the claim of originality?

The peculiar features of the contributions just enumerated seem to warrant their arrangement in a special category, but this does not argue in them greater value than that attaching to those of somewhat different character which come to be considered now. Indeed, some of the latter type have exerted a more powerful and widespread influence than many of the former, and have been productive of greater good to medicine and humanity.

In June, 1842, Jos. Warrington's "Obstetric Catechism" which for a time was used as an epitome of the subject of midwifery by students, appeared.

The year 1843 was marked by the appearance of an essay² which was productive of a great deal of good, from the pen of the eminent poet-physician, Oliver Wendell Holmes. At that period the then authoritative works upon obstetrics, those of Dewees and Meigs, both maintained the non-contagiousness of puerperal fever. Holmes boldly joined issue upon this momentous point, and, although devoting much less attention to this department than the authors mentioned, his observations led him to a more correct conclusion.

In 1845 an important contribution to a subject which even now has received little attention, was made by Isaac E. Taylor, of New York, in an essay upon Rheumatism of Uterus and Ovaries.³ In this some strik-

¹ Amer. Journ. Obstet., vol. viii. p. 636.

² New England Quarterly Journ. of Med. and Surg., April, 1843, p. 503.

³ Amer. Journ. Med. Sci., July, 1845, p. 45.

ing cases of rheumatic disorder of the muscular structure of the pregnant uterus were recorded.

During this year W. L. Atlee published a synopsis¹ of 101 ovariectomies, and an essay upon Intra-Uterine Fibroids.²

During the next year an essay appeared from Samuel Kneeland, Jr.,³ of Boston, maintaining a close relationship between epidemic erysipelas and puerperal fever. It is well known how much favour this view has since met with.

The year 1846 was marked by a discovery in this country which may be said to overshadow any other of its contributions to medicine. I allude to anæsthesia, discovered by Horace Wells, a dentist of Connecticut, and subsequently made practicable and useful by W. T. G. Morton, likewise a dentist, of Boston. Only the relations of this subject to obstetrics and gynecology find legitimate place in this essay.

In January, 1847, anæsthesia by ether was first employed for assuaging the pains of labour by Prof. Simpson, of Edinburgh; in April of the same year it was employed in this country, by Dr. N. C. Keep, of Boston; and in May, by Dr. Channing, of Boston, in a case of instrumental labour. The introduction of this beneficent agent into the lying-in chamber constitutes an era in the history of obstetrics. It is somewhat singular that after the discovery of anæsthesia in this country; after the prediction, long before its discovery, by one of America's greatest physicians, that "a medicine would be discovered that should suspend sensibility altogether, and leave irritability, or the powers of motion, unimpaired, and thereby destroy labour-pains altogether;" after it had been employed here in hundreds of cases for surgical operations, this link of the chain should have been forged by a European. Yet such was the case, and far be it from any American to begrudge him one atom of the glory which he deserves, or to endeavour to dim its lustre by "faint praise."

Boston was the field in which the first demonstrations of anæsthesia, as an agent of practical value, were made, and there appeared the first and most ardent advocate of its use in obstetrics in this country. Dr. Walter Channing was elected to the chair of obstetrics in Harvard, in 1833, and was recognized as a leader in this department, both from his teachings and writings. He warmly espoused the subject, and in 1848 published a treatise on Etherization in Childbirth, illustrated by 581 cases. This volume numbers 400 pages, and served to bring the subject fully before the whole civilized world. So well did it serve its purpose that no similar work has since appeared either from an American or European author.

What a striking contrast is presented between the rapid acceptance of this discovery by the whole medical world and the tardy, unwilling, bitter reception of ovariectomy! The first patient in Boston submitted to operation under anæsthesia, was etherized by Morton in October, 1846. Writing in April, 1847, Hayward declares that ether "has probably been used in this way by several thousand individuals in this city within the last six months," and, in 1848, Channing,⁵ of the same city, illustrates the utility of this agent in the lying-in chamber alone by the citation of over five hundred cases.

¹ Amer. Journ. Med. Sci., April, 1845, p. 309.

² Trans. Amer. Med. Assoc., vol. iii. p. 380.

³ Amer. Journ. Med. Sci., April, 1846, p. 324.

⁴ Rush, Med. Inquiries and Observations, 3d ed., vol. iv. p. 376.

⁵ Etherization in Childbed, Boston, 1848.

In 1847, I. E. Taylor contributed an essay drawing attention to the causation of exophthalmos and enlargement of the thyroid gland by excessive lactation; and Fordyce Barker one upon diseased states of the uterine neck.

In 1850 the first attempt at the establishment of an obstetric clinic in this country was made by J. P. White, of Buffalo. In furtherance of this mode of instruction, the act of human parturition was displayed ocularly to some sixteen students, the professor explaining its features during its accomplishment. A perfect storm of popular, and to a certain extent of professional indignation, was excited by this, which was only stemmed by the dignified and bold attitude of the united faculty of the University of Buffalo, and the support lent by enlightened obstetricians throughout the land.

The whole subject was fully brought out in the trial of the People *v.* Dr. H. N. Loomis, a report¹ of which to-day constitutes a curious episode in the medical literature of the century. In this will be found a letter signed by seventeen physicians, characterizing the demonstration as "wholly unnecessary, and grossly offensive, alike to morality and common decency."

During the next year a full synopsis² of all the known cases of ovariectomy which had up to that time been performed appeared from W. L. Atlee. This embodied 222 cases, and constituted the most valuable statistical table which had yet appeared.

In the same year a masterly essay upon the Corpus Luteum of Menstruation and Pregnancy³ was submitted to the American Medical Association, and was awarded the prize. Its author was John C. Dalton, of New York.

In 1853 Thomas F. Cock published a Manual of Obstetrics,⁴ a *multum in parvo* of the most reliable maxims in that art, which even now constitutes the *vade mecum* of many of our students.

Two years afterwards a paper⁵ was read by Fordyce Barker before the New York Academy of Medicine upon the Treatment of Puerperal Convulsions, which fully presented all that was then known upon a subject which has since called forth so much discussion. In the same year R. A. F. Penrose published an interesting and valuable essay upon a Case of Triplets, with the Mechanism of Labour.⁶

In the same year James Deane, of Massachusetts, published an essay upon "The Hygienic Condition of the Survivors of Ovariectomy," which was particularly valuable at a time when this operation was being weighed in the balance and its beneficent results doubted by many of the most sincere investigators.

In 1856⁷ there appeared the most exhaustive and valuable essay upon ovariectomy which had yet been published. This was the prize essay of Geo. H. Lyman, of Boston, entitled, "History and Statistics of Ovariectomy, and the Circumstances under which this Operation may be regarded as Safe and Expedient." It appeared at a most opportune moment, and, characterized as it was by a fair and manly spirit, a remarkable degree of accuracy, and entire absence of narrow and prejudiced

¹ Jewett, Thomas & Co., Buffalo, 1850.

² Trans. Amer. Med. Assoc., vol. iv. p. 286.

³ Ibid., p. 547.

⁴ W. Wood & Co., N. Y.

⁵ Transactions, vol. i. p. 273.

⁶ Med. Exam., Feb. 1855, p. 77.

⁷ Publications of Mass. Med. Soc., May, 1865.

views, it did a great deal of good in reference to the important subject with which it dealt. Although twenty years have elapsed since its publication, it can still be read with profit and be regarded as a safe guide in reference to many essential points.

During the years 1848 and 1856 there appeared in the *American Journal of the Medical Sciences*¹ some very valuable essays of statistical character upon rupture of the uterus by J. D. Trask, of Astoria, Long Island. These were valuable by the faithfulness and accuracy which characterized them, and the thoroughness with which the subject was treated. The same author has now nearly ready for publication a paper bringing the subject down to the present day.

In the latter of these years I. E. Taylor, in a report of Two Cases of Recto-Vaginal Fistula, cured by a New Operation,² advocated severance of the sphincter ani in such cases after the manner of Rhea Barton.

During the succeeding year two valuable papers appeared, one by Emil Noeggerath upon Metastatic After-Pains,³ and another by J. Marion Sims, upon Silver Sutures in Surgery.⁴

In 1858 J. Foster Jenkins,⁵ of Yonkers, made an important contribution to the literature of the subject of spontaneous umbilical hemorrhage in the newly born, and William Read, of Boston, one upon the influence of the Placenta upon the Development of the Uterus during Pregnancy.⁶

During the following year three essays well worthy of note appeared; two by Noeggerath, upon the Local Disinfecting Treatment of the Cavity of the Uterus for the Treatment of Puerperal Fever,⁷ and on the Operation of Turning by External Manipulations;⁸ one by Sims upon Amputation of the Cervix, Stump covered with Vaginal Membrane.⁹

In 1861 William Read published a paper¹⁰ upon The Formation of Knots in the Umbilical Cord, and Fordyce Barker¹¹ one on the Use of Anæsthetics in Midwifery. The latter of the subjects was one requiring at that time all the light which could be shed upon it by conscientious observers.

In this year there appeared¹² an interesting paper by Samuel R. Percy, of N. Y., demonstrating the tenacity of vitality possessed by the human zoosperm. His statements are here given in his own words:—

"I was called to attend a lady with uterine disease, but I considered it best to postpone all treatment, as on the next week her husband would leave home to be absent two or three months. On the Monday following he left, but she did not call upon me until a week from the day following. On examination with the speculum I found a mass of what I supposed to be muco-purulent matter, proceeding from the os uteri. Wishing to ascertain its character, I examined it with the microscope, and was surprised to find that it was semen, and that it contained living spermatozoa and many dead ones. Communicating in a proper way my discovery, I questioned her as to the time of her last intercourse with her husband. It was on the Monday morning before leaving,

¹ N. S., vol. xv. pp. 104 and 383, and xxxii. p. 81.

² N. Y. Med. Journ. ³ N. Y. Journ. Med., May, 1857, p. 287.

⁴ Trans. N. Y. Acad. Med., Nov. 1857.

⁵ Trans. Amer. Med. Assoc., vol. xi. p. 263.

⁶ Am. Journ. Med. Science, April, 1858, p. 309.

⁷ Contrib. to Midwifery and Dis. of Women, New York, 1859.

⁸ N. Y. Journ. of Med., Nov. 1859, p. 329.

⁹ Trans. N. Y. State Med. Society, 1861, p. 367.

¹⁰ Am. Journ. Med. Sci., Oct. 1861, p. 381.

¹¹ Trans. N. Y. Acad. Med., vol. ii. p. 251.

¹² Amer. Med. Times, March, 1861, p. 160.

nearly eight and a half days previous. I would stake my reputation on her honour." Dr. Percy further says: "Knowing that the zoosperms of the frog are frequently found living days after the frog's death, and even when it has been frozen, I can conceive no reason why human spermatozoa may not retain their vitality for some time, especially when protected by warmth and placed in the situation where nature designed them. But to test this matter, I placed some semen in the lower part of a piece of moistened membrane, tied it, and placed it within the vagina of a mongrel bitch. Upon removing it, upon the sixth day, most of the zoosperms were possessed of vitality, though there were many dead ones. These facts may have an important bearing in a medico-legal way."

During the next year the subject of Pelvic Hæmatocele began to attract considerable attention in America. From the year 1831, in which it was first described by Récamier, of Paris, it had not ceased to attract considerable attention in France, and between that period and 1858 Bernutz, Vigues, Nelaton, Gallard, and Voisin had written their well-known essays upon it. Up to this year, however, only one case had been reported amongst us, and it constituted an era in the subject for three essays to appear in one year. One was by John Byrne, of Brooklyn; one by Fordyce Barker; and one by E. Noeggerath. All these were read before the N. Y. Academy of Medicine, and appeared in its Transactions.

During this year I. E. Taylor published a valuable essay¹ upon the non-shortening of the supra and infra-vaginal portion of the cervix uteri up to the full term of gestation. In this the author contested the views of Stoltz, of Strasbourg, to the effect that gradual expansion of the cervical canal during the latter months of pregnancy effaced or obliterated that portion of the uterus.

In 1863, H. R. Storer,² of Boston, added to the literature of the subject of anæsthesia in midwifery and medical surgery an essay of considerable value; Barker one upon Albuminuria³ as affecting Pregnancy, Parturition, and the Puerperal State; and E. N. Chapman a report⁴ entitled a Selection of Remarkable Cases.

The next year saw the publication of two able papers upon Ovarian Tumours and Ovariectomy,⁵ by E. R. Peaslee; an essay upon Spinal Irritation,⁶ by Charles F. Taylor; and an excellent treatise upon Chronic Inflammation and Displacement of the Unimpregnated Uterus, by W. H. Byford, of Chicago.

In 1865, T. A. Emmet published upon the Treatment of Dysmenorrhœa and Sterility,⁷ resulting from Ante flexion of the Uterus, and upon the Radical Operation for Proccidentia;⁸ I. E. Taylor upon Placenta Prævia;⁹ and Peaslee¹⁰ gave Statistics of 150 Cases of Ovariectomy.

The work of Byford, mentioned as having appeared in 1864, had already met with so brilliant a success that it now reappeared, enlarged and improved, under the title of the Medical and Surgical Treatment of Women.

¹ Am. Med. Times, vol. iv. p. 342.

² Boston Med. and Surg. Journ., vol. lxxix. p. 249.

³ Bulletin N. Y. Acad. Med., vol. ii. pp. 36 and 67.

⁴ Med. and Surg. Reporter, Phila.

⁵ Bull. N. Y. Acad. Med., vol. ii. p. 226.

⁶ Trans. N. Y. State Med. Soc., 1864, p. 126.

⁷ New York Med. Journ., June, 1865, p. 205.

⁸ Trans. N. Y. State Med. Soc., 1865, p. 62.

¹⁰ Am. Journ. Med. Sci., Jan. 1865, p. 89.

⁸ Ibid., April, 1865, p. 1.

During the next year, I. E. Taylor¹ reported sixty cases of recto-vaginal and recto-labial fistulæ treated by the plan already mentioned, and Emmet² published an essay upon Atresia Vaginæ.

This year was specially marked by the appearance of a work which more profoundly aroused the gynæcologists of Europe, as well as of America, than any other which had appeared since those of Bennet and Simpson. This was a work entitled *Clinical Notes on Uterine Surgery*, by J. Marion Sims. The clear, forcible, and persuasive style of this work, the record of successful operations which it contained, and the stamp of earnest and original thought which it bore upon every page, served to give it a circulation which demanded its translation into almost all the modern languages of Europe, and to make it an essential in the library of every progressive gynæcologist. Ten years have elapsed since its publication, and yet it may safely be stated that no work now extant constitutes a more perfect guide to the gynæcological surgeon.

In this year appeared, too, an excellent treatise of over fifty pages upon Vesico-vaginal Fistula, by M. Schuppert, of New Orleans. This contained an exhaustive *resumé* of the history of the operation, was fully illustrated, and embodied the extensive experience of one who has made himself well known as a successful operator in this field of surgery.

In this year, also, especial attention was called to the subject of extirpation of the uterus for fibroids, by the publication of a successful case, by H. R. Storer,³ in which this organ and both ovaries were removed. This grave procedure, recommended, but never practised, as early as 1787, by Wrisberg, was in the present century performed by Clay, of Manchester, and Kœberlé, of Strasbourg. In 1854, the first operation was performed in this country for this purpose, by Kimball,⁴ of Lowell, the tumour weighing six pounds, and the patient recovering. He has been followed by Burnham, Cutter, Peaslee, Darby, Sims, Atlee, Wood, Sands, Buckingham, Storer, Hackenberg, Weber, Thomas, Chadwick, and others. The statistics of the procedure in this country have not been collected, but it is safe to say that no such results can be reported as have recently come to us from Paris, where M. Péan has met with a success of seven out of nine, or an equivalent of seventy-eight out of one hundred. Kimball has thus far performed ten operations, with four recoveries and six deaths. In New York city the operation has been repeatedly performed, but never yet with a favourable issue.

In 1867, Dr. E. D. Miller,⁵ of Boston, published an essay introducing into practice the scarification of the lining membrane of the body of the uterus, and described an instrument for performing this operation; and a valuable paper was read before the American Medical Association by Stephen Rogers,⁶ of New York, advocating gastrotomy after rupture of the cyst of extra-uterine pregnancy, for the purpose of ligating bleeding vessels, and thus giving the patient a chance for life. As early as 1849 this course had been suggested by W. W. Harbert in the *Western Journal of Medicine and Surgery*; but to Rogers belongs the credit of pressing the claims of the idea upon the profession in a way to attract to it the grave attention which it deserves.

¹ Trans. N. Y. State Med. Soc., 1866, p. 97.

² Richmond Med. Journ., Aug. 1866, p. 89.

³ Am. Journ. Med. Sci., Jan. 1866, p. 110.

⁴ Bost. Med. and Surg. Journ., May, 1855, p. 249.

⁵ Ibid., March, p. 133.

⁶ Trans. Am. Med. Assoc. 1867, vol. xviii. p. 85.

Montrose A. Pallen, formerly of St. Louis, now of New York, read in the same year an interesting paper on the Treatment of Certain Uterine Abnormities, before the American Medical Association, and published a *Resumé*¹ of forty-six operations for dysmenorrhœa by the division of the cervix uteri.

Wm. T. Lusk² also made a contribution entitled *Uræmia, a Common Cause of Death in Uterine Cancer*.

In this year H. Lenox Hodge,³ in a case of tubo-uterine pregnancy, performed a very remarkable and successful operation for removal of the fœtus. The pregnancy had advanced to the eighth month, and a thin septum divided the true and unoccupied uterus from the adjoining vicarious one so as to prevent delivery. Hodge cut through this, and delivered the child *per vias naturales*. The child lived about ten hours, and the mother recovered.

In 1868 the first journal ever devoted especially to the interest of obstetrics and gynæcology in America appeared in New York. The establishment and early maintenance of this excellent quarterly, styled *The American Journal of Obstetrics and Diseases of Women and Children*, were entirely the results of the energy and enterprise of a single member of the profession, B. F. Dawson. After eight years of existence it has established its right to be considered one of the most valuable periodicals of the country, and under its present editor, Paul F. Munde, fully maintains its position.

During this year there appeared three works in this department of medicine; first, the *Obstetric Clinic* of George T. Elliot, classic in style, and replete with the wise counsels of a master in the obstetric art; second, a *Treatise upon Vesico-vaginal and Recto-vaginal Fistulæ*, by T. A. Emmet; and third, a *Practical Treatise upon the Diseases of Women*, by Gaillard Thomas.

Two good papers likewise appeared, one upon *Intra-uterine Injections*, by M. A. Pallen,⁴ and one upon the *Treatment of the Uræmic Convulsions of Pregnancy* by Morphia, by F. D. Lente.⁵

In 1868, H. R. Storer,⁶ of Boston, advocated inclosing the pedicles of ovarian tumours in the abdominal walls. This method, which he styled "pocketing the pedicle," consisted of fixing it in the abdominal opening and completely covering it by the cutaneous tissues.

The year 1869 was rich in essays of considerable value. Chief among these may be mentioned one upon *Ovariocentesis Vaginalis*,⁷ and another upon *Chronic Metritis* in its relation to Malignant Disease of the Uterus, by Noeggerath; one by Wm. Goodell,⁸ of Philadelphia, upon *Concealed Accidental Hemorrhage of the Gravid Womb*; one upon the *Surgery of the Cervix* in connection with the treatment of certain Uterine Diseases, by T. A. Emmet;⁹ one upon *Hypodermic use of Ergot* in Post-

¹ Humboldt, *Med. Archives*, 1867, vol. i. p. 7.

² *N. Y. Med. Journ.*, June, 1867, p. 205.

³ Parry, *op. cit.* p. 266.

⁴ *St. Louis Med. and Surg. Journ.*, July, 1868, p. 294.

⁵ *Med. Record*, April 15.

⁶ *Ibid.*, Jan. 15, 1868, p. 519.

⁷ *Amer. Journ. Obstetrics*, May and November.

⁸ *Ibid.*, vol. ii. pp. 1, 505, and 610.

⁹ *Ibid.*, February, 1869, p. 339.

partum Hemorrhage, by F. D. Lente;¹ one upon Face Presentations, by I. E. Taylor;² one upon Intra-uterine Injections, by Joseph Kammerer;³ one by J. G. Pinkham,⁴ of Lynn, on Scarification of the Fundus Uteri in Chronic Metritis and Endometritis, which had been previously advised by Miller; one by H. R. Storer⁵ upon a Method of Exploring and Operating upon the Female Rectum by Eversion of the Anterior Rectal Wall by a finger in the Vagina; and one upon the Pathological Sympathies of the Uterus, by V. A. Taliaferro,⁶ of Ga.

The literature of fibro-cystic tumour of the uterus is very recent. In 1869 Koeberlé, of Strasbourg, tells us that only fourteen cases had been recorded, and of these two were discovered *post-mortem*. In that year C. C. Lee,⁷ of New York, collected nineteen cases, and published them in an interesting paper.

In the same year⁸ Gaillard Thomas published the account of a case of inversion successfully reduced by dilatation of the constricting neck through an opening in the abdomen made by section through its walls. This procedure has not met with favour, and has not since that time been repeated by any one but its author.

During this year a society, which exerted considerable influence in arousing attention to the subject of Gynæcology in New England, was formed in Boston, chiefly through the exertions of Horatio R. Storer, and called the Gynæcological Society of Boston. Before the year had expired a journal emanated from this society styled the Journal of the Gynæcological Society of Boston. It now no longer exists, but during its period of publication it exercised a decided influence in this department of medicine.

Societies devoted to obstetrics and gynæcology have likewise been established in Louisville, Philadelphia, and New York. They are still in active operation, and furnish in their proceedings and reports a valuable fund of information to the general reader of the medical periodicals of the country.

We now arrive at the commencement of the present decade, and during the six years of it which have now expired, so numerous have been the contributions to this department, that only a small proportion, consisting of the most valuable, can be noticed. During the first year of this period, there appeared Byford's Treatise on the Theory and Practice of Obstetrics, the first systematic work upon this subject which had appeared since that of Bedford, which is elsewhere noticed. An excellent paper likewise appeared from C. C. P. Clark,⁹ of Oswego, upon the Management of the Obstetric Forceps, replete with the sagacious observations of an original and candid observer; and an important essay upon Anal Fissure in Women, by H. R. Storer.¹⁰

¹ N. Y. Med. Record, vol. iv. p. 411.

² N. Y. Med. Journ., November, 1869, p. 125.

³ Read before Co. Med. Soc.

⁴ Journal Gynæcological Society, Boston, vol. i. p. 23.

⁵ Ibid., vol. i. p. 24.

⁶ Ibid., vol. i. p. 341.

⁷ Med. Record, vol. iv. p. 495.

⁸ Amer. Journ. Obstetrics, November, 1869, p. 423.

⁹ Trans. N. Y. State Med. Soc., 1870, p. 249.

¹⁰ Journal Gynæcological Society, Boston, vol. ii. p. 221.

The next year produced a carefully prepared and interesting essay by Wm. Goodell,¹ entitled *A Critical Inquiry into the Management of the Perineum during Labour*; one of great practical value by the late John S. Parry² upon *Sudden Enlargement of Ovarian Cysts from Hemorrhage into them*; one upon *Dysmenorrhœa and its Treatment* by M. A. Pallen;³ a report of a Case of *Simultaneous Intra- and Extra-uterine Pregnancy going to Full Term*, by S. Pollak;⁴ a paper upon *Mechanical Treatment of Displacement of Unimpregnated Uterus*, by George Pepper, of Philadelphia;⁵ a very valuable essay upon *Placental Extraction and Placental Expression*, by Parvin;⁶ and an equally valuable one by Nathan Bozeman⁷ upon *Urethrocele, Catarrh, and Ulceration of the Bladder in Females*.

The next year was marked by the appearance of three works devoted to this department of medicine; first, one upon *Ovarian Tumours, their Pathology, Diagnosis, and Treatment*, by E. R. Peaslee; second, one upon *Hysterology*, by E. N. Chapman; and third, one upon *Electro-cautery in Uterine Surgery*, by John Byrne. The first of these is certainly the most systematic and complete treatise which has thus far appeared upon this subject, and the last, although small in dimensions, deals exhaustively with the important matter upon which it touches.

During this year there appeared a remarkable essay upon *Latent Gonorrhœa in Females*, by Noeggerath. In this the author strongly assumes the position which is here announced in his own words.⁸

"I have undertaken to show that the wife of every husband who, at any time of his life before marriage, has contracted a gonorrhœa, with very few exceptions, is affected with latent gonorrhœa, which sooner or later brings its existence into view through some one of the forms of disease about to be described. . . . I believe I do not go too far when I assert that, of every 100 wives who marry husbands who have previously had gonorrhœa, scarcely 10 remain healthy; the rest suffer from it or some other of the diseases which it is the task of this paper to describe. And, of the ten that are spared, we can positively affirm that in some of them, through some accidental cause, the hidden mischief will sooner or later develop itself."

The disorders supposed by the author to result from latent gonorrhœa are perimetric inflammations, both acute and chronic; ovaritis; and catarrh of the genital tract.

In the same year Parry⁹ published an essay upon the comparative merits of craniotomy and Cæsarean section in pelves with a conjugate diameter of $2\frac{1}{2}$ inches or less.

The idea of draining the peritoneal cavity by creating an opening *per vaginam* into its most dependent portion, the pouch of Douglas, has often presented itself to the minds of ovariologists. As early as 1855¹⁰ the practice was adopted by Peaslee, and subsequently by Kimball, of

¹ Amer. Journ. Med. Sci., Jan. 1871, p. 53.

² Amer. Journ. Obstetrics, Nov. 1871, p. 454.

³ Missouri Med. and Surg. Report.

⁴ St. Louis Med. and Surg. Journal, May, 1871, p. 193.

⁵ Amer. Journ. Obstetrics, Aug. 1871, p. 258.

⁶ Trans. Ind. State Med. Soc., 1871, p. 11.

⁷ Amer. Journal Obstetrics, Feb. 1871, p. 636.

⁸ Published in Bonn.

⁹ Amer. Journ. Obstet., Feb. 1873, p. 644.

¹⁰ Handyside, of Edinburgh, first did this in 1846.

Lowell; W. W. Green and Tewkesbury, of Portland; Miner, of Buffalo; Thomas, of New York, and others. This plan of accomplishing drainage of the peritoneal sac has by no means met with general approval or adoption. Nor is it probable that it will ever do so, for between the peritoneum and vagina there is an interspace which is filled by areolar and adipose tissue into which an escape of putrid fluid must often enter and from which it would readily be absorbed.

In 1872 Marion Sims¹ revived the method and by passing into the peritoneum, through the vagina, tubes of small calibre admitting of perfect drainage, and the use of disinfectant injections he hoped to overcome more perfectly than had hitherto been done, the fatal consequences of septicæmia. The reviver of this plan of drainage still has sanguine hopes of its success, and commonly resorts to it.

In the year 1873, Thomas M. Drysdale of Philadelphia, after a careful and conscientious study of the subject, described a peculiar characteristic corpuscle as contained in ovarian fluid. This he regarded as diagnostic of ovarian cystoma. He sums up his views upon the matter in these words :—

“I claim then, that a granular cell has been discovered by me in ovarian fluid, which differs in its behaviour with acetic acid and ether from any other known granular cell found in the abdominal cavity, and which, by means of these reagents, can be readily recognized as the cell which has been described; and further, that by the use of the microscope, assisted by these tests, we may distinguish the fluid removed from ovarian cysts from all other abdominal dropsical fluids.”

These views are by no means generally accepted by microscopists, but their author feels sure of his position, and W. L. Atlee, many of whose diagnoses have in great degree rested upon them, has full faith in its correctness.

In this year a remarkable paper entitled, “How do the Spermatozoa enter the Uterus,”² by Joseph R. Beck, of Indiana, appeared. The author, meeting with a female patient, the subject of prolapsus uteri, who was so excitable as to have the sexual orgasm produced by digital examination, examined visually as this occurred, and thus reports what he saw: “The os and cervix uteri had been firm, hard, and generally in a normal condition, with the os closed so as not to admit the uterine probe without difficulty; but immediately the os opened to the extent of fully an inch, made five or six successive gasps, drawing the external os into the cervix each time powerfully, and at the same time becoming quite soft to the touch. All these phenomena occurred within the space of twelve seconds’ time certainly, and in an instant all was as before; the os had closed, the cervix hardened, and the relation of the parts had become as before the orgasm.” Similar observations had been previously made by Sitzmann,³ of Germany, and published in 1846.

In the next year W. L. Atlee gave to the profession a work entitled *General and Differential Diagnosis of Ovarian Tumours*, with special reference to the operation of ovariectomy, and occasional pathological and therapeutical considerations. This embodied his vast experience,

¹ New York Med. Journ., Dec. 1872, p. 561.

² St. Louis Med. and Surg. Journ., New Series, vol. ix. p. 449.

³ A. Flint, *Physiology of Man*, vol. v. p. 339.

and recorded the results of his numerous operations for the removal of tumours of the uterus and ovaries.

In this year likewise appeared the work of D. Hayes Agnew, of Philadelphia, upon Laceration of the Female Perineum and Vesico-vaginal Fistula, their history and treatment. This likewise was the production of a man of mature thought and great experience and knowledge of the subject with which he dealt. To this author the profession is indebted for a great deal of honest and valuable labour in reference to the surgery of the female genital organs.

A lengthy report, in book form, of the Columbia Hospital for Women, in Washington, D. C., was made by J. H. Thompson, and a valuable essay was published by T. A. Emmet,¹ upon Laceration of the Perineum, involving the Sphincter Ani, and an Operation for securing Union of the Muscle. Emmet in this essay urges upon operators the necessity of inserting the first suture low down, on a level at least with a horizontal line running along the lowest edge of the anus, so as to lift the ends of the broken muscle up, and cause them to approximate. This constitutes the pivotal point of the operation.

In this year, also, appeared an essay by W. T. Lusk,² on the Etiology and Indication for Treatment of Irregular Uterine Action during Labour.

The year 1874 was very prolific in contributions to this department. In it appeared a work which has met with great and deserved success by Fordyce Barker, upon the Puerperal Diseases, and an essay by the same author, upon³ The Age when the Capacity for Child-bearing ceases.

In this year two articles appeared from one of America's greatest ovariologists, Gilman Kimball,⁴ of Lowell, upon Pelvic Drainage after Ovariectomy; a noteworthy report by the late A. K. Gardner, of a case in which ten quarts of urine were at one operation removed from the female bladder; a paper by H. Lenox Hodge,⁵ upon Injection of Tincture of Iodine into the Cavity of the Uterus in Hemorrhage after Delivery; a report by Goodell⁶ on The Means employed at Preston Retreat for the Prevention and Treatment of Puerperal Diseases; a most valuable and masterly essay on the Mechanism and Treatment of Breech Presentations, by R. A. F. Penrose;⁷ a description of an operation styled Vaginocervicoplasty,⁸ a substitute for amputation of the cervix uteri in certain forms of intra-vaginal elongation, by Pallen; an additional paper, on The Physiological Lengthening of the Cervix Uteri at, before, during, and after Delivery, by I. E. Taylor;⁹ one by Marion Sims,¹⁰ upon Enucleation of Intra-uterine Fibroids, and one upon Erysipelas in Child-bed Fever, by Thomas C. Minor, of Cincinnati.

¹ Med. Record, March, 1873, p. 121.

² N. Y. Med. Journ., June, 1873, p. 561.

³ Phila. Med. Times, vol. v. p. 161.

⁴ Boston Med. and Surg. Journ., 1874, N. S., vol. xiii. p. 517, and vol. xiv. pp. 132, 272.

⁵ Am. Journ. Obstet.

⁶ Amer. Sup. to Obstet. Journ. of Great Britain, 1874, July, p. 49, and August, p. 65.

⁷ Ibid., March, 1874, p. 177.

⁸ Amer. Journ. Obstet., Feb. 1875, p. 604.

⁹ Ibid., May, 1874, p. 119.

¹⁰ N. Y. Med. Journ., April, 1874, p. 337.

In the same year there appeared a work, small in proportions but powerful in style and effect, from the pen of Edward H. Clarke, entitled *Sex in Education*. Few works in modern times upon medical topics have so thoroughly succeeded in arousing the attention of the community for whose benefit they were undertaken.

In 1875 James D. Trask,¹ of Astoria, N. Y., published an essay upon Injection of Tincture of Iodine into the Cavity of the Uterus in Hemorrhage after Delivery; J. R. Chadwick,² of Boston, one upon Injection of Nutritious or Cathartic Fluids into the Intestines through the abdominal walls by means of an aspirator needle when the stomach proves entirely intolerant; A. D. Sinclair,³ of Boston, one upon Manual Dilatation of the Os Uteri; Noeggerath⁴ one upon Vesico-vaginal and Vesico-rectal Touch, a new method of examining the Uterus and Appendages; and Goodell,⁵ a Clinical Memoir upon Turning in Pelves narrowed in the Conjugate Diameter, and another⁶ upon The Management of Head-last Labours.

In the same year Wm. H. Byford⁷ read before the American Medical Association an able report upon The Treatment of Uterine Fibroids by Ergot (Hildebrandt's method); F. D. Lente⁸ and Alex. Murray⁹ published essays advocating the use of electricity in arresting post-partum hemorrhage; Parry¹⁰ one upon The Use of the Hand to correct unfavourable presentations and positions of the child during labour; and another¹¹ upon The History of an Outbreak of Puerperal Fever at the Philadelphia Hospital, characterized by diphtheritic deposits on wounds of the genital organs; M. B. Wright¹² one upon Obliquities of the Gravid Uterus; and Lusk,¹³ a valuable report upon The Genesis of an Epidemic of Puerperal Fever.

A very interesting and valuable paper appeared during this year from H. F. Campbell,¹⁴ of Georgia, upon Position, Pneumatic Pressure, and Mechanical Appliance in Uterine Displacements. The author advocates replacement of uteri affected by posterior displacement by the assumption on the part of the patient of the knee-chest position, and the introduction of an open glass tube by herself into the vagina while this position is maintained. He declares that the position, favouring as it does gravitation of the uterus and other viscera forwards, aided by the entrance of air into the vagina by the glass tube, will commonly effect reposition of the displaced organ.

During the same year a faithful Report¹⁵ upon Obstetrics and Gynecology was made by Wm. T. Howard, to the Medical and Chirurgical Faculty of Maryland; an essay upon Ichthyosis of the Tongue and

¹ Am. Journ. Obstet., Feb. 1875, p. 613.

² Ibid., Nov. 1875, p. 399.

³ Boston Med. and Surg. Journ., Feb. 1875, p. 117.

⁴ Am. Journ. Obstet., May, 1875, p. 123.

⁵ Ibid., Aug. 1875, p. 193.

⁶ Phila. Med. Times, May.

⁷ Trans. Am. Med. Assoc., vol. xxv. p. 173.

⁸ Am. Journ. Obstet., Nov. 1875, p. 518.

⁹ Psycholog. and Med.-Legal Journ., June, 1875, p. 345.

¹⁰ Am. Journ. Obstet., May, 1875, p. 138.

¹¹ Am. Journ. Med. Sci., Jan. 1875, p. 46.

¹² The Clinic, vol. ix. p. 301.

¹³ Am. Journ. Obstet., Nov. 1875, p. 369.

¹⁴ Read before Georgia Medical Association, April.

¹⁵ Transactions Med. and Chir. Fac. of Med. 1875, p. 73.

Vulva was published by R. F. Weir;¹ one upon Menstruation and the Law of Monthly Periodicity, by J. Goodman,² of Louisville; and one by D. Warren Brickell, of N. O., upon Rupture of the Perineum,³ with a description of a new operation.

S. S. Todd,⁴ of Kansas City, published a good *resumé* of the subject of Anæsthetics in Labour, embodying the views of many prominent obstetricians in this country and in Europe; and Thomas⁵ a case of Tubal Pregnancy treated by incision into the sac by the galvano-caustic knife, and immediate removal of fœtus and placenta through the incision thus made.

H. L. Byrd⁶ published the details of a new plan of artificial respiration to be practised upon the neonatus. This consists in the artificial production of the inspiratory and expiratory efforts by alternately bending the trunk of the child, held in the two palms, very much backwards and forwards. As the head and shoulders fall below a horizontal line passing through the operator's hands placed under the infant's loins, and the legs and pelvis below the same line on the other side, air rushes into the lungs by reason of the recession of the diaphragm and separation of the ribs. Then as the diaphragm is pushed upwards, and the ribs approximated by the anterior bending of the trunk, so that the child's knees approach the chin, the air is expelled.

An essay appeared during this year also from Ellwood Wilson⁷ upon Version in contracted Pelvis. Controversial in style, it demonstrated the truth of the aphorism "ex collisione, scintilla."

Wm. H. Byford⁸ in 1876 published an interesting case of Dropsy of the Amnion, and I. E. Taylor⁹ read before the N. Y. Academy of Medicine an essay entitled Is Craniotomy, Cephalotripsy, or Cranioclasm preferable to Cæsarean Section in Pelves ranging from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches?

The subject of inversion of the uterus has, during the last half century, attracted considerable attention in this country, and the valuable contributions of White, Noeggerath, Emmet, and others, to it, have been elsewhere noticed. The remarkable fact that a uterus for a long time inverted may, by an effort of nature, replace itself, has received due notice, and the evidence of American physicians has sustained that given of the fact by Spiegelberg, Leroux, De la Barre, Thatcher, Rendu, Shaw, Beaudelocque, and others of Europe.

It must be borne in mind that the possibility of this occurrence has been boldly denied by high authority, and that accumulation of evidence upon it is desirable. The case of spontaneous reposition recorded by De la Barre¹⁰ was presented by him before the Academy of Surgery of Paris, and Beaudelocque was appointed a committee to examine into its authenticity. He reported that the account was "totally false," yet some

¹ N. Y. Med. Journ., March, 1875, p. 240.

² Richmond and Louisville Med. Journ., vol. xx. p. 553.

³ Amer. Journ. of Med. Sciences, April, 1875, p. 322.

⁴ Trans. Med. Association of Missouri, 1875, p. 37.

⁵ N. Y. Med. Journ., June, 1875, p. 561.

⁶ Med. Record, July 31, 1875, p. 519. His first article on this subject appeared in 1870.

⁷ Amer. Journ. Obstet., April, 1876, p. 97.

⁸ Chicago Med. Journ. and Exam., January, 1876, p. 1.

⁹ Med. Record, March 15, 1876.

¹⁰ Archiv. Gén. de Méd., 1868, t. ii. p. 393.

years afterwards he himself met with the occurrence of a similar case which convinced him of his injustice to De la Barre.

Meigs¹ publishes three such cases; Jason Huckins,² of Maine, one; and Chestnut,³ in 1876, records a most striking case, in which, after twelve years of inversion, a uterus was spontaneously replaced. In the last case no doubt as to the diagnosis can be admitted, for during its progress careful examinations were made by Byford, O'Ferral, and others. Indeed by the former a trial at replacement was practised, which lasted for about two hours.

In the May number of the *Obstetrical Journal of Great Britain and Ireland*, appears an excellent lecture upon Face Presentations, by Penrose; and in the January number of the *American Journal of Medical Sciences*, the report of a case of ovariectomy by Gaillard Thomas, in which four days after operation eight and a half ounces of milk were transfused into the patient's veins with good result. Thomas's procedure was based upon the experience of Hodder, of Toronto, Canada, and Joseph W. Howe, of New York. The former transfused milk on three occasions, and the latter on two. In no case did evil consequences result, and in two of Hodder's cases life seemed to be saved by the process. Thomas's case was the sixth on record, and the results were excellent. Since his publication J. W. Howe has experimented on the subject with very unfavourable results. Transfusion of milk practised upon seven dogs, has in every case resulted in death, and in one man suffering from pulmonary consumption in the third stage death from coma occurred a few hours after the operation. The subject demands, and is certainly worthy of, full and careful investigation. It is difficult to reconcile the discrepancy of results which now attaches to it. At present the subject stands thus: up to 1875 six transfusions upon the living subject with no evil result, and with three instances of great benefit: during 1876 one transfusion upon man, and seven upon dogs, with fatal consequences in every case.

In the yearly contributions to medical literature there is a great deal of faithful, arduous, and useful work done, which redounds but little to the immediate advantage of the doers. This is the work done by reviewers. To J. C. Reeve, of Dayton, Ohio, this department of medicine is much indebted in this respect. His reviews of the subject of anæsthesia which have appeared in the *American Journal of the Medical Sciences*, are well known.

The mental development which appears thus far to have resulted from the peculiar education and training which characterize the civilization of this country, exhibits a much more marked tendency to the adaptation of means to immediate practical results, than to a devotion to abstruse study or pains-taking scientific investigation. Hence a fruitful harvest would naturally be expected in the way of ingenious appliances and well-conceived instruments, the outcome of a century of experimentation. This expectation will not be disappointed either in this or any other of the practical departments of medicine.

A vast number of modifications of the obstetric forceps, both short and long, have been made; so large a number, indeed, that even a mention of them would prove impossible. The most valuable and generally popu-

¹ Obstetrics.

² Thomas' Dis. of Women, 4th ed. p. 431.

³ Amer. Practitioner, May, 1876, p. 284.

lar of these is the long forceps of Hodge. Two other excellent modifications are those of the late George T. Elliot and of J. P. White. The two latter are light, yet powerful; elegant in shape; and well adapted to the varied requirements of this most useful of surgical instruments.

Of vaginal specula there is rapidly being created as great a variety as that of forceps. Sims' great invention, developing an entirely new method of examination, certainly takes the lead of all others, and up to the present date none other can be compared with it for practical advantages. This instrument, however, requires two things for its employment—first, a certain degree of skill on the part of the operator in its use; and, second, an assistant to hold it during examination. To avoid the necessity of the second requirement, modifications have been made by Howard, Emmet, Hunter, Bozeman, Byrne, Nott, Otto, Noeggerath, and many others.

It would be useless to enumerate, as an original conception, each instrument employed in the operation for cure of vesico-vaginal fistula, for all of these were invented by Sims, as the pioneer in this procedure.

The uterine repositor of Sims is the best instrument yet devised for replacing the retroflexed or retroverted uterus. It is far superior to the ordinary uterine sound in efficiency, and unattended by its dangers. The same remarks apply to Sims' silver uterine probe, as compared with the unyielding sounds of Simpson, Huguier, and Kiwisch.

In operations upon the vagina and perineum, Emmet's curved scissors are very useful, and greatly facilitate these procedures; and after operations for atresia, Sims' vaginal plug of hard rubber or glass is indispensable.

For dilating a constricted uterine neck, Molesworth has furnished us an excellent instrument in his hydrostatic dilators, which, though acting upon the same principle as the water-bags of Dr. Barnes, are more powerful and manageable.

The syringe of Davidson is a valuable one for accomplishing vaginal irrigation, and the induction of premature delivery.

In many operations for the removal of abdominal tumours, temporary control of hemorrhage can be perfectly accomplished by H. R. Storer's clamp-shield, which becomes, under these circumstances, a valuable instrument. Permanent clamps have been devised by Atlee, Dawson, Thomas, and Greene, of Portland. The last of these consists of a spring clamp, intended to cause ligatures placed around the pedicle to cut through, and thus be liberated.

The galvano-caustic battery, only of late years introduced amongst us as a means of amputating vascular parts like the cervix uteri, etc., has now become very popular, and the ingenuity of Byrne and Dawson has furnished us with instruments at once small, portable, and very powerful. These instruments weigh only five or six pounds, and occupy little more space than an octavo volume. Their present dimensions and certainty of action remove two of the greatest objections attaching to the cumbrous and fickle instruments formerly in use.

For a long time after pessaries were put upon their proper basis as surgical appliances of great value, and as means which were essential to the proper management of uterine displacements, few modifications were made in them. Of late years, however, this has not been so. Hodge's instrument has been usefully modified by Albert H. Smith.¹ Many varieties

¹ *Obstet. Journ. of Great Britain, Amer. Sup.*, 1875, vol. iii. p. 7.

of vaginal stem pessaries have been devised for prolapsus ; and Ephraim Cutter, of Boston, has accomplished a valuable improvement in retroversion pessaries by getting support by a stem arching backwards over the perineum, and attaching to a belt worn around the waist.

In certain operations upon the anterior vaginal wall, the apparatus of Bozeman, by which the patient can be kept in a modified genu-pectoral attitude, proves very useful ; by its use anæsthesia may be kept up for a long time with perfect comfort to the patient.

John T. Hodgen, of St. Louis, has made the needles employed in operations for vesico-vaginal fistula trocar-pointed, with great advantage. Their power of penetration is great, while at the same time they do little damage by cutting the tissues.

Parvin's polypsome is a very useful instrument for the removal of growths attached in utero, which are out of reach of manipulations practised by the instruments ordinarily in use.

A most valuable improvement in the trocar and canula for tapping the abdomen and abdominal tumours has been effected by S. Fitch, in his "dome trocar." By this instrument complete protection is given to the viscera by a projecting piece which shields them from its sharp point.

An excellent double canulated tube has been introduced for pelvic drainage by George H. Bixby, of Boston. It fulfils every requirement under these circumstances as to thoroughness and facility of employment.

REVIEWS.

ART. XXVI.—*Lectures on Orthopedic Surgery and Diseases of the Joints.* By LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery, Fractures and Dislocations, and Clinical Surgery in Bellevue Hospital Medical College, etc. etc. Illustrated by 274 wood-engravings. 8vo. pp. x., 476. New York: D. Appleton & Co., 1876.

THIS book is the work of so distinguished a writer, and one of so high authority among surgeons, especially where articulations are in question, that we think the whole profession will unite with us in extending to it a welcome, which will strengthen as the contents of the volume become known.

While there can be no difference of opinion as to the value of clinical lectures to those who hear them, and at the same time see the cases which elucidate the views of the lecturer, we have always felt that they do not present their subject-matter in the most attractive or most satisfactory form to the general reader. The reasons for this are manifold, and patent to any observer. The lecturer is less trammelled by authorities than the systematic writer; and, while very apt to assume the *ex-cathedra* tone, is often above the mild though useful work of compiling the opinions of others and giving those annotations and references which are so valuable to the student. Then the subjects under discussion are apt to be contracted or expanded by the times and exigencies of the lectures, and the hobbies of the lecturer to be brought into a bold relief, which they would hardly obtain were the object in view the preparation of a treatise with a proper proportion of parts. We do not wish these remarks, however, to be applied to Professor Sayre in particular, but make them merely as indicating the opinion of the reviewer, as to the inherent qualities of clinical lecturers in general. As the best means of avoiding misconstruction, and of affording our readers an opportunity of forming their own opinions of the volume, we shall proceed to lay before them a somewhat cursory analysis of its contents.

Of the four hundred and seventy pages of which the book consists, less than one hundred and forty are devoted to orthopedic surgery proper, as the term is generally understood, while three hundred and thirty are filled with the consideration of diseases of the joints. We say orthopedic surgery proper, because we have always regarded the term as involving either congenital or chronic conditions only. But, while indulging in this verbal criticism, we, in common with most surgeons, would have regarded the work as shorn of much of its glory, and very much of its usefulness, had its author not included in it the views upon joint-diseases, and their treatment, which have made him famous.

The first lecture is occupied with a history of orthopedy, inducements to its study, and the plan of instruction proposed by the lecturer. Prof. Andry, of Paris, is credited with being the founder of the science, in 1741, as well as the inventor of the term orthopedy, although both Hippocrates

and Celsus described methods for the relief of deformities. As is the case with all sciences, many have contributed to the arrangement of facts of which it consists; but with the introduction of subcutaneous tenotomy by Stromeyer, in 1830, a new era has opened before orthopedic surgery. From that apparently so simple discovery, namely, the rapid healing of subcutaneous incisions, has sprung much of the modern progress of this branch of medical science.

In the opinion of Dr. Sayre, orthopedic surgery met with great difficulties upon its first introduction to the medical profession of this country, from the general opposition to specialists. Now there can be little doubt that the great body of general practitioners shared the feeling and prejudice to which the lecturer refers, nor is it yet entirely absent, but, like all mooted points, the subject has two sides. While specialists have added much to our knowledge, and from the nature of things each subdivision in art or science must receive its principal increments of growth from such sources, yet many specialists have not shown such thoroughness of information, outside of their own narrow limits, as to secure the confidence of their brother practitioners. Most of us are familiar with cases in which specialistic treatment has failed to accomplish what was expected from it in consequence of neglect or ignorance of rudimentary principles. Such specialists as are here referred to, have been the real opponents to the subdivisions of medical practice, which have now multiplied, in our large cities at least, until the occupation of a general practitioner bids fair to become a thing of the past, and to share the fate of the dodo of Mauritius and the European bustard. We saw recently a chart intended to aid a family of average intelligence in selecting an attendant, should one of its numbers be overtaken by disease or accident. Upon a diagram of the human frame, in connection with the different regions, were displayed the names of those whose published experience and reputation entitled them to be considered as authorities in affections of the designated localities. It struck us that difficulties would arise in the use of such a chart, however ingenious, and that it would probably be safer to call in the family physician, who could pay his visit, decide what organ or region was in fault, and then turn the patient over to the proper specialist. Such a method would doubtless be very scientific, but might prove rather hard upon the gentleman who gains his bread by general practice, whose only resource under the circumstances would be to become a specialist somewhere between a chiropodist and barber, and endeavour to make his living by science also. Dr. Sayre is clear and emphatic in his denunciations of quackery of every kind; to the knowledge of a thoroughly instructed surgeon he has added special acquirements, the fruits of which are apparent in the volume before us, which volume, with others of like kind, furnish the strongest arguments in favour of specialism.

The plan of our author in these lectures has been to teach by cases rather than by abstract doctrines; and he does not ask assent to the latter unless supported and illustrated by the former.

As there is nothing better fitted to give an idea of any man's mind and his methods of working than the definitions and classifications he uses, we propose to epitomize what Dr. Sayre has said upon these subjects in his second lecture, as follows: Deformities, or morbid alterations in the form of some part of the body, are either congenital or acquired. Congenital deformities are divided, in the first place, into malformations, in which there is "deficiency, or absence, or increase in the number of parts

belonging to the body, or in which there are abnormal parts or fissures." Monstrosities also are classed under this head. The second subdivision states that "a congenital distortion is one in which, *at birth*, there is simply a distortion (*sic*) of some of the normal parts of the body." Acquired deformities are direct, as where ankylosis depends upon a diseased condition of the joint; indirect, as where the mobility of an articulation is affected by disease of the surrounding structures; or direct and indirect combined. Deformities are further treated of as *paralytic* and *spastic*, and rules are given for distinguishing between them. The remainder of the lecture is devoted to the etiology of these affections. The causes of congenital deformities are declared to be at present inscrutable; but it is claimed that, in acquired cases, the starting point can always be more or less readily ascertained. It is held that, when the cause of the deformity is once accurately made out, it is generally easy to prevent or remedy the condition; and that, when it cannot be entirely removed, there is almost always a susceptibility of relief. Deformity may be perpetuated by a secondary condition long after the primary disease has ceased to exist. By way of illustration is instanced a hip-joint in which contraction of the adjacent muscles has been first induced by reflected irritation from the diseased joint. When the joint gets well, the muscles are found to have undergone structural shortening and to be incapable of voluntary relaxation, while by this shortening the deformed condition is kept up. An interesting fact is noticed in this connection, namely, that, when this structural change in the muscular tissue has taken place, the temperature of the part will be found to be lowered, which is attributed by our author, to the diminished vegetative action in the locality. Reference is also made to that beautiful, natural law which requires action to preserve perfection of structure. This reflection is called forth by the joint stiffened and destroyed merely by disuse. Nor need our author have stopped here, for this law is not confined to the physical world; but the mind of man, in common with the machinery produced by its ingenuity, hastens to decay when not in action. Labour is the inevitable requisite for permanent usefulness; and from the fiat that bread shall be eaten in the sweat of the brow, there is no escape.

While discussing the causes of deformities, Dr. Sayre narrates some very interesting cases where deformity resulted from the paralysis of nervous exhaustion, induced by the reflex irritation of phimosis, with adherence of the prepuce to the glans penis. It is in such cases that the capabilities of the specialist are put to the test, as he must be prepared, not only to diagnose the cause, but be ready to follow Dr. Sayre's example and perform the operation which is to remove the source of the evil. In the cases mentioned by our author, circumcision and freeing the glans from the abnormal adhesions was completely successful, and recovery followed with almost startling rapidity. When speaking of the effect exercised by deformities upon the minds of the subjects of them, a case is given where the existence of supernumerary toes and fingers led to a highly hysterical and choreic condition, which entirely subsided with the removal of the offending members.

Postponing the consideration of diagnosis until the special deformities are discussed, the next three lectures are devoted to treatment. Most surgeons will agree with Dr. Sayre when he insists upon the importance of beginning the treatment early, as with rare exceptions no advantage can accrue from waiting. The exceptions we have in mind are some of the

plastic operations, rendered necessary by malformations, which, though included by the author in his classification, are not referred to by him in detail.

On page 27 is given what its author says is a universal law, by which it is possible to decide upon the necessity of resorting to tenotomy in any given case.

"Place the part contracted as nearly as possible in its normal position, by means of manual tension gradually applied, and then carefully retain it in that position; while the parts are thus placed upon the stretch, make additional point pressure with the end of the finger or thumb upon the parts thus rendered tense, and, if such additional pressure produces *reflex contractions*, that tendon, fascia, or muscle must be divided, and the *point* at which the reflex spasm is excited is the point *where* the operation should be performed."

This seems a somewhat too mechanical method of determining the point to be selected for division, yet we hesitate to place our opinion in opposition to the extended experience of so high an authority as the distinguished professor at Bellevue.

General directions are given for the performance of tenotomy and myotomy, Dr. Sayre now advocating an immediate restoration of the parts to their normal position, without waiting for closure of the wound in the skin, as was formerly the advice in vogue. When, however, there is ankylosis of the joint, it is better to wait a few days before breaking up the adhesions therein. This is the doctrine now generally held among surgeons, and there seems to be no ground for opposition to it.

In the directions given for the use of apparatus to substitute or supplement division of the contracted parts, great emphasis is placed upon that golden rule of orthopedic surgery, *to hasten slowly*; indeed too great earnestness can hardly be used in enforcing this truth, for undue haste is self-defeating and sometimes ruinous. Due credit is given to Mr. Barwell for the introduction of India rubber bands to remedy the effects of muscular paralysis, which improved method of treatment is destined to work almost as great a revolution in orthopedic surgery as was accomplished by the discovery of Stromeyer. The caution is given that when electricity is resorted to, it should not be used either too strong or too long, experience teaching that the feeble muscles are as easily over-tired by this as by any other stimulus. Attention is also drawn to the importance of persisting in proper manipulative exercise while a fixed apparatus is in use, in order that ankylosis may not be induced, and we are amused at the energy shown by our author when speaking of the term "massage" which he stigmatizes as having a quackish sound. Dr. Sayre is not much in favour of inunction, says he does not like grease, and wisely thinks that the substances derived from the palm and elbow are the most truly emollient.

The subject discussed through the several following lectures is the special treatment of the various forms of talipes. As is well known, Dr. Sayre looks upon the great majority of these cases as having their origin in paralysis. In this view most modern authorities are agreed, and the instances cited in the volume before us bring out clearly the great advantage of artificial muscles in remedying the effects of paralysis. These muscles are made out of rubber tubes, with light chains at either end. The chains are then attached at one end to little staples projecting from a sheet of tin secured by adhesive plaster near the origin of the natural muscle, while the other end is connected with another staple located near the insertion of the same muscle. The shoe or apparatus used is light and easily changed. Con-

joined with the use of these appliances, free manipulation of the enfeebled member is always carefully attended to by Dr. Sayre, thus stimulating the muscles to healthy contraction, while they are protected from excessive fatigue by the artificial support afforded by the apparatus.

It would be easy to dwell at greater length upon this subject, but the large space already occupied warns us to pass on to that portion of the book which will be most interesting to the general surgeon. The twelfth lecture is occupied with the consideration of corns, bunions, and some other acquired deformities, which are succinctly treated, while in the following lecture we are introduced to diseases of the joints.

This subject is one of great importance, as the experience of every practical surgeon demonstrates, and than which no other surgical affection has a more extended literature. In the treatment of these affections great progress has been made of late years, and hardly any one has come more prominently before the profession in connection with the pathology and treatment of such diseases than the author of these lectures. Certainly on this side the sea, there is no living surgeon who has done more to develop and advance our knowledge of the subject than Dr. Sayre. Many of his opinions may be disputed, yet many of his ingenious expedients have been coming gradually into use among surgeons, so that no one can follow the practice of a first-class hospital, and not see stamped upon it the impress of his and Mr. Barwell's minds.

We notice in this lecture (No. XIII.) that Dr. Sayre is very emphatic in claiming that the astragalus forms a simple hinge-joint with the bones of the leg, and asserts most positively that any apparent lateral motion takes place, in reality, at the articulation of the astragalus with the calcaneum, or is caused by rotation, either at the knee or hip-joints. Some high authorities have disputed this assertion, but when the close contact between the lateral facets of the astragalus and the malleoli is borne in mind, we think Dr. Sayre's statement must commend itself to the judgment of anatomists.

Dr. Sayre, as is perhaps known to most of our readers, holds to the view that joint disease begins, most generally, not in the synovial membrane, nor in the articular cartilage, but in the bone immediately adjacent. He has very little sympathy with the constitutional theory in these affections, although not denying diathetic influences. We are by no means advocates for the *via media* where theory or abstractions are concerned, but here, as in most practical questions, we regard that way as safest. The human frame is of so compound a nature, and its constituents have so much variety of structure, that it is very difficult to make generalizations which will fit all cases. In a joint, for whose integrity the health of so widely varied, though contiguous elements, is necessary, our experience has taught us that we cannot refer all cases to one set of causes. In the ankle-joint, for instance, the consideration of which by our author has led to these remarks, we cannot account for the successive implication of adjoining bones on the simple theory of some previous and neglected injury to one of them. Nor can we part easily with the old scrofulous diathesis, which so many now regard as a wild hypothesis, but suffering humanity has too often found to be a painful entity. We desire to guard these remarks by stating that Dr. Sayre, while holding largely to the traumatic origin of disease of the ankle-joint, does not question the importance of the influence exercised by an impaired constitution, or the scrofulous diathesis, where it exists. The method of treatment recommended for diseased

ankle-joint by extension, incisions into and setons passing through the joint, is pretty well known to the profession. While it may seem heroic upon first sight, yet the tedious and oftentimes unsatisfactory progress of such cases certainly makes these apparently vigorous measures excusable, and even commendable. The lecturer does not mention stimulating injections, which others have sometimes found of decided advantage in these cases.

The affections of the knee-joint are treated of in four lectures, space being devoted to them in proportion to their importance. Among the symptoms referred to by the lecturer as possessing special diagnostic importance, as being always present and continuing persistent after all other signs of joint disease have passed off, is the presence of pain, which can be elicited upon pressure over the coronary ligaments, more especially over the external one. While this symptom is present, Dr. Sayre says that the indication to continue treatment is very plain. By it, he thinks, we have a valuable guide to direct our course in convalescent cases, and that when it disappears, and not till then, we may discontinue treatment.

The treatment of white swelling of the knee, given by Dr. Sayre, has the same characteristics as that advised by him in disease of the ankle. First, and most important, is such an application of extension to the joint as can be maintained while the patient is going about. This is accomplished by means of our author's own devising, but which we doubt our ability to make clear to the reader without the diagrams, with which the book itself is plentifully illustrated. Strips of good sticking-plaster are attached longitudinally to the skin above and below the joint affected, and secured by a roller. The ends of the strips most distant from the joint, having been left free, are now attached to iron collars which encircle the limb above and below the articulation, and are themselves connected by firm lateral bars, which have a ratchet arrangement. This ratchet is then turned by a screw, and the joint surfaces being separated by the extension thus produced, the weight of the body is supported by the bars connecting the collars. With such an apparatus applied, the patient, being enabled to take exercise in the open air, is placed under the most favourable hygienic conditions. No one who has watched the gradual wasting, and the subdued hospital look acquired by these cases, from enforced confinement, will question the advantage certain to accrue from any form of dressing which will enable the sufferer to go about in the open air, and vary the monotony of the sick-room.

In the case of the ankle-joint, Dr. Sayre does not mention complete excision thereof, but speaks highly of partial sub-periosteal resection and gouging, when dead bone is present, with the insertion of a shred of oakum through the joint, fully opened, while the extension is persisted in. Such cases are pictured in the volume, but we must say we can hardly conceive of a person going about with a seton through the ankle-joint. Resection of the knee-joint is described, but in a somewhat summary manner, and partial excision is advised where practicable, while, as in the other joints, continued extension, with pressure, are the means principally relied upon. Partial resections were not at one time regarded with favour by operative surgeons, but the experience of our author, together with that of some others, would seem to point to the propriety of resorting to them more frequently. In this connection it is well to draw attention to the fact that pressure, by sponge applied dry and afterwards moistened, or, should the sponge not answer, by using a double India-rubber collar partly filled

with water, which can be distended by air, is very often resorted to as an important part of the treatment, both in the knee and ankle-joints. The remarks upon the proper management of a joint during convalescence are of especial value, but as there are two lectures entirely devoted to the consideration of ankylosis, it will be well to defer notice of them until these lectures are reached.

Morbus coxarius furnishes the theme for five lectures, or rather more than one-fifth of the entire book, and these lectures will be read with great interest by surgeons, not only on account of the intrinsic importance of the subject, but from the prominence heretofore given to it by our author.

As causes of hip-joint disease Dr. Sayre recognizes synovitis, rupture of the ligamentum teres, and rupture of vessels immediately beneath the articular cartilage, and he holds that all these causes are almost invariably the result of violence. There is not space to enter the lists with Dr. Sayre and present our readers with the pros and cons on this point, even were we so disposed, yet we cannot suppress our surprise that the assignment of the disease to some previous injury, on the part of the friends, should be adduced as an argument to prove the generally traumatic origin of these cases. The experience of the reviewer has been that parents and friends are exceedingly prone to regard some old or fancied injury as the starting point of any localized disease, so that he has long since ceased to attach much importance to the vast majority of such statements. That many cases of hip-joint disease have a traumatic origin there can be no doubt, and to evidence the truth of this doctrine many and strong reasons are given by our author, yet we must say, as we did when speaking of the ankle-joint, that here also the middle ground seems to us the most tenable.

We would commend to the careful attention of the reader what Dr. Sayre says upon the symptoms of hip-joint disease as lucid and forcible in the highest degree, than which we do not remember anything written upon the subject more distinct and instructive. He thinks that spontaneous luxation of the head of the femur rarely, if ever, occurs, but says that when displacement does exist it is always attributable to unintentional violence in moving the parts at a time when the ligaments are weakened and disorganized. In an experience of fifty-nine excisions of the hip-joint, in only one was luxation present, and in that one it was directly traced to unguarded movement of the joint as mentioned above. The treatment pursued by Dr. Sayre consists in procuring good hygienic surroundings, with generous diet for the patient, continued extension by means of special splints which are accurately and fully described, together with the removal of dead bone through sinuses, or by resection when necessary. Our author thinks that early treatment by extension and rest will, in most cases, preclude from the necessity of resorting to operative interference.

Lecture XXIII. is concerned with the history of hip-joint exsection, the steps of the operation and several illustrative cases being given. Through the various procedures we shall not attempt to follow our author, who, while not the first surgeon to practise this operation, may be truly regarded as its father, having adopted it while it was very young. Dr. Sayre was the first surgeon in this country to resort to the operation for hip disease, and he has done most to procure its introduction to the profession, having far exceeded all others in the numbers of his recorded cases.

It is evident that whatever Dr. Sayre does, he does with his might, and

to his energetic advocacy of this operation we owe the establishment of it among the conservative measures of surgery. Of his method of performing the operation, it is only necessary to remind the reader that great care is used to preserve the periosteum, by which means a new joint is often secured. The special point in the after-treatment is the famous dressing known as the wire breeches.

The table of fifty-nine cases of excision of the hip appended to this lecture is well worthy of careful study. Of the entire list, thirty-nine were alive at the time of the publication of the lectures, while of the twenty which had died, but eight are regarded by our author as having succumbed to a continuance of the disease. Of the thirty-nine living cases, twenty recovered with motion and less than one inch shortening, eight with motion and more than one inch shortening, two had ankylosis, while nine were still under treatment and progressing favourably at the time of writing. Twenty-three of the whole number were females, and thirty-six were males. The limits of age were twenty-one months and thirty-two years, but much the larger number were under fourteen years of age.

That so serious a step as resection is one to which we can justifiably resort, is, in our opinion, established by the experience of our author and of those who have followed his leading. In no other way can relief to a distended joint be so effectually obtained, and by removing the head of the femur, we merely follow the line of nature's process and aid her efforts to get rid of the offending member. When the acetabulum is diseased, we question the propriety of such free use of gouge and forceps as is advised by Dr. Sayre, and, having provided ample way for the removal of debris by the discharges, would prefer there to stay our hand. Of the comparative freedom from danger of this operation, at least in children, there seems to be no question, and as we have seen marked benefit result in properly selected cases, we have no hesitation in recommending an occasional resort to it, while we agree most heartily with Dr. Sayre in thinking that early and careful treatment will, in the great majority of cases, do away with the necessity for this *dernier ressort*.

In taking leave of the subject of hip-joint disease, it is well to add that, in this review, no comparison has been instituted between the splints invented by Dr. Sayre and those designed by other surgeons. This has seemed advisable, inasmuch as the principles involved are the same in all, and the space at our command has been limited. Some may find in the Sayre splints all that they desire, and be able to accomplish the indications required with them, while others may prefer those of Dr. Taylor, or, like ourselves, think that those designed by Dr. D. Hayes Agnew, of Philadelphia, are at once the simplest and most manageable.

The next lecture treats of those affections which simulate morbus coxarius. Parallel tables of symptoms are given to make more clear the differential diagnosis; and while the statements are somewhat brief it may be read, both with interest and profit.

Antero-posterior curvature of the spinal column comes next under consideration. The methods of treating this affection are discussed at some length, but the new feature in connection with the subject is the plaster of Paris jacket, strongly recommended by the Bellevue professor. The patient is drawn out, or suspended until pressure upon the opposed bony surfaces is taken off, then plaster bandages are applied over a nicely fitting flannel shirt, from the middle of the pelvis to the axilla, and in this way an accurately fitting corset or jacket is obtained, which keeps up the

extended position, while the patient goes about. This is a new method with Dr. Sayre, but his experience in its use has been sufficient to make him almost enthusiastic in its praise. Should the constriction of the chest by this unyielding apparatus seriously impede respiration, the machine may be slit up a little in front, but in practice Dr. Sayre has found that sufficient respiration in a vertical direction is secured to obviate any necessity for this step. We should think that this plaster jacket, or some modification of it, would prove of much future value, and shall give it a trial at the earliest opportunity.

Anchylolysis forms the subject of two lectures, the subject being treated somewhat in detail. Dr. Sayre, as is well known, is an advocate for the forcible rupture of the adhesions in cases where the anchylolysis is fibrous. It may not be as well known that he adopts extraordinary precautions to prevent subsequent inflammation being set up by his manipulations. His directions to guard against inflammation consequent upon this proceeding are minute and strongly insisted upon. After the joint has been made thoroughly limber under an anæsthetic, a firm bandage is applied to the whole extremity, while the joint itself is carefully padded, so as to secure equable pressure, then a sponge is placed over the main artery above the articulation, and this sponge being moistened, is expected to aid in controlling the circulation in the neighbourhood of the joint. The patient is kept at perfect rest until the danger of inflammation has passed off, when the whole programme is repeated. We confess to a little fear of this sponge, though Dr. Sayre claims that its skilful use in his hands is unattended with danger. We forgot to state that the aid of ice is also called in. After our author's energetic denunciation of the term "massage," as foreign and quackish, we are amused to see with what persistence he clings to "brisement" and "brisement forcé" in describing his manner of treating these cases. Under the head of bony anchylolysis, the usual operations are referred to, and some very interesting cases narrated.

Lecture XXIX. and last, treats of facial paralysis, torticollis, and deformities of the wrist-joint. The injurious effects of cosmetics are referred to by Dr. Sayre, when speaking of some of the cases of wrist drop from lead palsy he has been called upon to treat. Were women likely to take the advice of physicians when it is in the way of the pursuit of that beauty which is to secure the admiration of the opposite sex, we think "Laird's Bloom of Youth" would find its sale much diminished, for the doctor speaks of its poisonous effects with a vim and energy which is admirable. While we have little hope of any change in the habits of the fair sex, we would yet add our feeble note to enforce the clarion-like vigor of Dr. Sayre's condemnation of the whole class of such cosmetics.

The index furnished with this work is meagre and unworthy of the name, as it hardly differs from a table of contents. It is generally admitted, now-a-days, that a book of scientific pretensions should have an index, but four pages of titles can hardly be looked upon as answering the demand. In this so-called index are but two references under the word joint, but Laird's Bloom of Youth is again conspicuous. We must join issue with Dr. Sayre for his use of the term *contractured*, which is intended to take the place of structural shortening, as applied to muscles and tendons. The man who recklessly coins a word commits a crime against his native language, which is his to use, but not his to add additional burdens to. While in this country we can have no king's English, we certainly have a language which is the property of all the

people, and which no one is entitled to corrupt, nor can we admit the right of any man to manufacture and commit to print one barbarous term, that he may be saved the trouble of writing two acknowledged words.

Criticism upon the style and phraseology of these lectures is, however, disarmed by the statement that they are printed just as they were delivered at Bellevue Hospital Medical College during the session of 1874 and 1875, and were first read by their author in proof. While we cannot commend this method of preparing works for the press, we can but wonder at the ease and facility of diction possessed by the author, and must admit that the method, which would result disastrously in the hands of many, has, in those of Dr. Sayre, produced a most instructive and readable book. We hope that the distinguished author of this volume may yet find time to prepare a systematic treatise upon the subjects he is so well fitted to discuss. Meanwhile, no surgeon can afford to be without this most valuable contribution to our knowledge of orthopedic surgery and diseases of the joints.

S. A.

ART. XXVII.—*Reports of the Medical Officer of the Privy Council and Local Government Board.* New series, Nos. iii. and vi.

Report to the Lords of the Council on Scientific Investigations made under their direction in aid of Pathology and Medicine. Presented to both Houses of Parliament by command of Her Majesty. London: Eyre & Spottiswoode, Printers to the Queen's most excellent Majesty, for Her Majesty's Stationery Office, 1874 and 1875.

THESE two bulky volumes, forming part of the famous series of Parliamentary "Blue Books," afford most gratifying evidences of a wise and comprehensive recognition among English legislators of the vital importance, to each and every member in a body politic, of furnishing aid from the public purse, and by legal authority, for the purpose of extending our knowledge in medical science. As such we welcome them not only for the rich harvest of brilliant discoveries with which they are freighted, but also for the example of *both* penny- and pound-wise expenditure, in the interests of scientific medicine, which we ardently hope will soon be followed by our own national authorities. Indeed our government being "founded for the people," can in no wise fulfil the object of its very existence more efficiently, than by fostering in the most liberal manner such researches into the nature and cause of those diseases, which every year bring death into so many thousand households, and embitter the happiness of tens of thousands among "the people" who survive their attacks.

The first article appended to Dr. Simon's Report for 1874 is Dr. Burdon Sanderson's second paper on the pathology of the infective processes in which, starting with the conclusion arrived at in his report, "On the Intimate Pathology of Contagion," viz. that *all contagia are probably particulate*, he proceeds to give an account of our present knowledge as to the pathology of the infective processes in erysipelas, splenic fever, diphtheria and relapsing fever. Before entering upon a review of his essay, however, we should premise that he uses the term "microzymes" and "bacteria" as synonymous with Hallier's "micrococci," Kleb's "*microsporon septicum*," Heuter's "monads" and Billroth's "*cocobacteria septica*;" also

that he adopts the word *mycosis* "to indicate the infiltration of a living tissue with micrococci" (bacteria).

In true diphtheria as affecting the pharynx and air passages (which is distinguished from surgical diphtheria) it has been found that the interfascicular channels of the submucous tissue, and the lymphatics with which these canals communicate, are filled with a granular material, which, according to Nassiloff, is neither fibrin nor detritus, but consists mainly of micrococci, so that "the changes which occur in faucial diphtheria are probably dependent on the occupation of the channels of absorption by masses of vegetation."

In order to prove that this vegetable growth is the existing cause of subsequent changes, numerous experiments have been made, the general plan of procedure followed by Nassiloff, Oertel, Eberth, etc., being to puncture the corneæ of rabbits, with needles charged with minute particles of false membrane from faucial diphtheria, the other eye being punctured in the same way with a clean needle, in order to compare a fresh traumatic injury, with the infected wound. After two or three days brownish-yellow streaks seen in the diphtherized cornea, were found on microscopic examination to be due to the filling up of canaliculi with micrococci.

Dr. Sanderson sums up the evidence from these experiments with the remark, that the subject is still in some obscurity, although it is of moment to have learned "that forms of micrococci exist, which possess the power of colonizing in living tissues, and thereby inducing a variety of inflammation, which is distinguished from others by its tendency to result in disintegration; and that this faculty of originating disintegrative inflammation, is possessed by them independently, *and can be exercised without the concurrence of any previously existing morbid process.*" Dr. S. declines to accept the statement of Letzerich and Oertel, since embodied in Ziemssen's Encyclopedia, as establishing beyond doubt the specificity of the so-called diphtheric fungus.

Passing on to the subject of erysipelas, our author quotes from the researches of Volkmann and Steudener, in regard to the pathological histology of this disease, as showing that the chief seat of corpuscular infiltration, by migratory white blood corpuscles, is not the cutis but the subcutaneous cellular and adipose tissues; and then proceeds to recount the investigations of Orth of Berlin and Lukomsky under v. Recklinghausen at Strasburg. These observations made upon five patients and numerous rabbits, frogs, etc., show that the interfascicular canaliculi and the lymphatic channels into which they empty, are found at, and just beyond the margin of an actively spreading erysipelas, plugged up with micrococci which in some instances were met with also in the capillaries and blood serum near the focus of disease. (These discoveries find a curious and interesting confirmation in the remarkably successful treatment of erysipelas with sulphite of soda solution, advocated some years since by Dr. Addinell Hewson, of Philadelphia.)

Dr. Sanderson prefaces the second part of his report with the statement that "there are four contagious diseases, in respect of which the presence in the contagious liquids, of forms of vegetation differing from those met with either after death in the normal tissues or liquids of the body, or during life in the products of primary or secondary inflammation has uæq established. These are smallpox, sheep-pox, splenic fever, and relapsing fever."

The credit of first observing organisms in the lymph of cow-pox and

smallpox is given to Keber of Dantzic, no notice being taken of the claim of Prof. Salisbury, of Cleveland, Ohio, that he had recognized the existence of a vegetable organism as the cause of smallpox so early as the year 1862. This fungus he afterwards named *Ios variolosa variola*. A lengthy paragraph quoted from Prof. Cohn, describes the organisms detected by Keber as spheroidal corpuscles about $\frac{1}{33000}$ of an inch in diameter, difficult of detection except when well illuminated under immersion lenses of high power. These spheroids rapidly multiply, giving rise to dumb-bells and chains of four or eight, which soon break up and become aggregated into colonies of sixteen, thirty-two, or more corpuscles somewhat resembling sarcina.

Reference is also made to the observations of Weigert, who proved the existence of similar micrococci in the lymphatics adjacent to pustules of a patient dying of variola, but, as Dr. Sanderson judiciously observes, it is chiefly by such investigations as those of Dr. Klein upon sheep-pox (*vide infra*) that we can obtain adequate proof of a theory that these micrococci are the *contagium vivum* of smallpox, and possess the property of reproducing or propagating the disease.

The staff-shaped organisms met with in the blood of cattle affected with milzbrand or splenic fever, are stated to have been first discovered in 1855, but their exact importance is still undetermined. It is true that we can entertain no doubt, that the injection into the bodies of healthy cattle of blood containing these rod-like bacteria, will produce splenic fever, but on the other hand, we are almost equally certain, that blood from a diseased animal, wherein no such bacteria and micrococci are apparent, may produce a like infection. It seems probable, however, from the experiments of Klebs and Kegel, that poisoned blood from which the fungous elements have been removed by filtration through unglazed porcelain, is no longer capable of causing the disease. Dr. Simon shows how completely the phenomena of the contagion in this complaint, viz. the short period of its active infectiveness, and yet the long time during which it may remain dormant, but still reappear, correspond to the rapid disintegration of the staff-shaped bacteria, and the existence of lasting or resting spores (Dauer sporen) as described by recent mycologists. He also points out how great additional importance the study of Milzbrand has acquired since the cases of *Mycosis intestinales* in human beings reported by Buhl, Waldeyer, and Munch, and regarded by them certainly, and by Dr. S., as probably identical with splenic fever.

Dr. Obermeier, of Berlin, in 1872 first announced the presence of spirilla in the blood of relapsing fever, and established their close relation to the pyrexia of that disease. His researches were amply confirmed by Dr. Litten, of Breslau, who reports 448 cases, in over 100 of which spirilla were found in the blood. These organisms generally appeared a day or two after fever set in, and ceased to be visible a few hours before defervescence. In numbers they varied from one in several slides, to several in each field of the microscope. In shape and size, they seem to have been often identical with spirillum as found in the oral cavity, and their activity of movement, varied with the period of pyrexia, being energetic in its early and middle stages, but languid towards its close. One suspicious statement is that they often assumed peculiar forms, such as circles *resembling blood disks*, etc., and suggests to the experienced microscopist, a kind of error, which has misled many honest but too enthusiastic observers.

Dr. Klein undertook the study of the minute pathology of sheep-pox,

because it very closely resembles human smallpox, and yet affecting one of the inferior animals, affords facilities for investigation, unattainable in the latter malady. The method adopted consists in inoculating sheep at various points by means of a hypodermic syringe, and also in producing a general infection, by injecting virus into the circulating blood. In a preliminary examination of the fresh lymph, he determined the existence of highly refractive spheroids (micrococci) which developed after a few hours or days, into dumb bells, chains, necklaces, mycelial threads, and colonies, these last corresponding to the *Zooglæa* of Cohn. The changes which he observed, and has figured very minutely, are thickening of the corium, germination of the deep epithelial layers, and of the endothelium of the bloodvessels, and dilatation of the lymphatics and the afferent canaliculi. These channels soon become filled with micrococci and mycelial threads, which latter after a time send forth filaments terminating in well characterized gonidia. The so-called cells of older authors in the pock, are dilated dropsical cell-elements which for a time are the seats of fungous growth, and finally when they communicate become filled with pus corpuscles, which migrate from the deeper layer of the corium.

This paper is profusely illustrated with drawings by Dr. Klein, which seem to show the correctness of his statements, and yet are widely open to the same kind of pitying or sarcastic comment, in regard to the author's credulity respecting what he *thought* he saw under the microscope, which in former years was heaped upon similar pictures, in the works of Salisbury of Cleveland, and Hallier of Jena.

The third report on anatomical researches into the lymphatic system and its relation to tubercle, also by Dr. Klein, opens with an investigation into the normal histology of the pleura and peritoneum, confirming and extending the researches of Recklinghausen and others, who have established the existence of lymph canalicular spaces between and beneath layers of endothelial cells; he also corroborates previous views in regard to the existence of lymphatic trunks and lymphatic capillaries, the former provided with valves and lined with spindle-shape epithelium. Further, he figures and describes minutely the stomata and pseudostomata, by which directly and indirectly communication takes place between the free surface of the serous membranes, and the lymphatic system.

Dr. Klein next proceeds to examine the effects produced in the process of artificial peritonitis in rabbits, etc., which, if not too intense, is as follows: The germinating endothelium, normally met with around the stomata and pseudostomata, grow out abundantly in bud-like processes, proliferating cells of which arrange themselves into cords which extend freely over the surface of the peritoneum.

In the chronic peritonitis of tuberculized animals, this condition of endothelial germination, limited especially to the margins of the stomata, communicating with the straight lymphatics, is even more marked; not only do these endothelial cells enlarge, become distinctly granular, present nuclei in the act of division, and germinate so as to produce lymphoid cells, but after a time this change gradually spreads to the endothelial cells of the neighbourhood, as well as to those of the vertical lymph canals, and to those of the lymphatic capillaries, into which these lymph canals open.

The abdominal surface of a diaphragm, furnished with abundant nodules of tubercle, may exhibit many varied stages of development in the germinating endothelium of the stomata, from small buds to large patches.

A similar study of the pulmonary organs affords us a view of analogous systems of lymph canals and canaliculi, emptying into the perivascular lymphatics, which ramify, in company with the bloodvessels, throughout the lung tissue. When artificial tuberculosis is set up, the pulmonic pleura becomes the seat of nodules, due to rapid germination of the branched connective-tissue corpuscles. Later on, superficial nodules appear in the lungs, which are in direct continuity with the subpleural lymphatics; still later, the process extends, so that the lymphatics of the affected portions are converted into endolymphangeal cords, constituting interalveolar trabeculæ of adenoid tissue. Dr. Klein thinks that in guinea-pigs, at least, the first step of tuberculization occurs in the ultimate branches of the pulmonary artery, the endothelium of which germinates and encroaches upon the lamina of the vessels. The morbid process then extends to the perivascular lymphatics, whose endothelium in turn, germinating and growing inward, at length closes up the vascular channels. Finally, by further extension of the process, proliferating epithelium in affected air-vesicles forms secondary nodules containing giant cells. These may rapidly undergo caseous degeneration, which never takes place in the perivascular cords or their primary lateral nodules. From a comparison of experiments with three series of cases of natural human tuberculosis, our author concludes that the pathological histology of tubercle in man differs from that of the analogous process in guinea-pigs in that the capillaries of the alveoli seem to be first affected, this being followed by germination of the epithelium of the alveoli and connective-tissue corpuscles of the alveolar septa, and still later by the formation of perivascular lymphatic cords made up of endolymphangeal growth.

In the fourth of these contributions to medical science, Dr. Creighton reports his results, as far as then obtained, in an effort to determine the process of infection, as occurring during the development of secondary carcinomata, sarcomata, and lymphadenomata. He selects as his field of study new formations in the liver, and founds his paper upon observations upon ten cases of hepatic tumours from human and animal subjects. Unfortunately, none of these specimens were examined in the fresh state, their characters being only investigated as modified by long immersion in spirit and mounting in balsam. Dr. Creighton advances a theory in opposition to Virchow's, that liver cells themselves, and not the connective-tissue cells of the organ, are the elements which undergo transformation in the heteroplastic growths. Further, that this transformation consists in the production of vacuoles in the hepatic cells, in which vacuoles develop small, round cells (by endogenous cell formation), which grow into giant cells, or proliferate into the cell nests of carcinoma. In this way a metaplastic, or heteroplastic, instead of a normal plastic activity of the cellular elements, is introduced. Our author seeks support for his theory in the facts, that vacuolation takes place in a fertilized ovum, in spermatozoid-bearing cells, etc.; but his chain of reasoning, being occasionally interrupted by such imperfect links as "there is nothing hazardous in supposing," wants logical sequence; and, remembering that he has never taken the trouble to examine the vacuoles, which play such an important rôle in his plan of metamorphosis in a recent state, and only makes a bold guess that, whilst fresh, they were filled with fat, we feel inclined to render the Scotch verdict of "not proven," in regard to this portion of his work.

The fifth and last paper of the volume is an elaborate article by Dr. Thudicum, designed to form part of a basis for the scientific study of the chemical pathology of the nervous system. His observations made upon upwards of one thousand ox brains, which were carefully comminuted, exhaustively extracted with alcohol, ether, etc., and the resulting extractives and *residua*, tortured with a vast array of reagents; detail the mode of production, and more or less briefly the properties of some seventy educts and products yielded by the brain of man and animals. Although chiefly useful, of course, to the specialist in chemical pathology, Dr. Thudicum's investigations are not without practical value to the general practitioner, as is illustrated by the suggestion on p. 200, "that the so-called brain fungus, the continued protrusion of brain matter through apertures of the skull, produced by mechanical injuries, may in certain cases find a physical explanation, in simple excessive hydration of the phosphorized (and nitrogenized) principles, producing general intracranial pressure."

The sixth number, fully equal to its predecessors in practical value, commences with a report of Dr. J. Burdon Sanderson on the Process of Fever, a subject which, whilst it has been a subject of almost hourly study for at least two thousand years, still remains shrouded in mystery. The essay opens with a *resumé* of Dr. Senator's observations and experiments upon dogs, in which an artificial pyrexia was produced, by the subcutaneous injection of perfectly fresh pus, in order to determine the amount and manner of the consequent disintegration of tissue. The results arrived at are that "fevered dogs lost on the whole from 3 to 4 per cent. of their weight during the first 24 hours of fever. Healthy dogs in the corresponding period of inanition lost about 1.6 per cent. As there was certainly no increase of carbonic acid discharge, this must have been chiefly due to loss of water." This conclusion does not seem to hold good as regards fever in human beings, although precise clinical investigations are not yet numerous enough to determine a negative with certainty.

Passing over some interesting observations upon the production and discharge of heat in fever, we find that Dr. Sanderson concludes that a satisfactory explanation of fever and its process is not yet possible, although enough is now known, to lead us to reject a favourite hypothesis of the day, that fever originates in disorder of the nervous centres, the influence of the nervous system controlling or restraining the liberation of heat at the surface of the body, so that by retention the temperature rises; and that this increased temperature so produced, acts on the living substance of the body, in such a manner as to disorder its nutrition. The alternative theory, namely, that fever originates in the living tissues, is from first to last a disorder of protoplasm, and all systemic disturbances are secondary, our author thinks is the basis on which, after the normal relation between temperature and thermogenesis is determined, we may hope *eventually* to construct an explanation of the process of fever.

Dr. Sanderson also contributes to this volume two reports of an experimental study of infective inflammations. The first of these, which has been before the profession for two or three years (vide *Transactions Royal Med. and Chirurg. Soc.*, vol. lvi.), comprises numerous experiments and observations from which Dr. S. concludes "that that combination of malignant fever with intense and destructive inflammations, to which pathologists have rightly applied the term septicæmia, because it is known by experiment as well as by clinical observation, to result from the existence

in the blood of putrescent albuminous matter, may also be produced by the introduction into the circulation, or into the serous cavities, of small quantities of liquids derived directly from living tissues, in certain states of inflammation; and that such states have the same distinctive characters, as those which distinguish inflammation of septicæmic origin. (2) That pyæmia (the term being understood to denote a general febrile disorder of less virulence than that of septicæmia, accompanied by numerous disseminated inflammations, characterized chiefly by their proneness to suppuration) is so closely related to septicæmia, as regards its origin and essential nature, that in these respects no line of distinction can be drawn between them; and that pyæmia, like septicæmia, may originate from a purely traumatic inflammation, independently of any infection with contagium derived from a previously existing pyæmic inflammation. (3) That both of these conditions are characterized by the existence of microzymes (bacteria, micrococci) in the infected liquids; and that the relation of intensity between different cases of septicæmia, and pyæmia infection, is indicated by the number and character of these organisms; so that in the most intense processes, *i. e.*, those which exhibit the characters of septicæmia, the exudation-liquids and the blood, are crowded with actively moving bacteria, while in the more chronic processes, the spheroidal and dumb-bell forms prevail, and the numbers of the organisms found in the liquids, are relatively inconsiderable."

In his report for 1875, Dr. Sanderson states, that, certain observations having indicated, that in the transmission of infective inflammation through a series of animals, an augmentation of infective activity takes place, he undertook numerous investigations to determine the circumstances under which this intensification occurs. The general plan of these experiments will be seen from the following example. "Primary peritonitis was induced on the 3d of February, 1875, by the subcutaneous injection (into the peritoneal cavity of a guinea-pig) of four cubic centimetres of a mixture of nine parts of distilled water, with one part of liquor ammonia. The liquid was boiled and cooled. Twenty-four hours afterwards, a large quantity of subcutaneous exudation liquid was obtained from the moribund animals, of which 1.62 c.c. were injected to the next in the series (No. 2). From No. 2, which died during the following night, peritoneal exudation liquid was injected into the peritoneum of guinea-pig No. 3, the dose being reduced to 0.486 c.c. Similarly No. 4 was injected from No. 3, and No. 5 from No. 4. In each of the three last-mentioned animals, the process was extremely rapid, so that it was difficult or impossible to make useful comparisons of their conditions during life." (The experiment was continued, however, to the 7th guinea-pig, and two dogs were also infected with analogous results.)

Our author concludes that a *phlogogenic* inflammation (one which produces an inflammation which is similar in character to that of which it is itself the product) becomes more intense by transmission, and that intensification of malignity is not gradual but *per saltum*. Further, that the most active products in these cases are yielded by animals which have longest resisted the most intense process (the organism of a dog proving to be as averse from infection as that of the guinea-pig is prone to it). The intensely infective serous exudations of guinea-pigs are distinguished by their high specific gravity, peculiar viscosity, and "by the presence of the spheroids and dumb-bells" (micrococci), "so often referred to, either isolated in the liquid, collected in cloud-like masses, or embedded in the cell substance of pus corpuscles."

Lastly, Dr. Sanderson very prudently remarks: "I think it desirable to repeat what I have often had occasion to insist on elsewhere, that the presence of characteristic organic forms in infective liquids affords *in itself* no conclusive evidence that these bodies are in themselves the cause of the infectiveness. If we infer from the constancy of their characteristics and from their invariable presence that they are the agents which produce the pathological results, we might be as seriously in error as those are who maintain, in the face of all the investigations relating to the subject made during the last few years, that they are without pathological significance. There is nothing in nature, and particularly in organic nature, without significance, nor ought it in the slightest degree to diminish the interest which we take in any phenomenon, that we are unacquainted with its relation to the other phenomena with which we find it associated. If these infinitely minute organisms are present in every intensely infective inflammation, we may be quite sure that they stand in important relation to the morbid process."

In the third article Dr. Klein gives a most important and conclusive report on the Intimate Anatomical Changes of Enteric Fever, in the course of which he claims to have discovered the true contagium of this disease in a peculiar vegetable organism, apparently identical with *Crenothrix polyspora* (Cohn). This claim is warmly endorsed by Dr. Simon, who remarks that "we may at least accept, as approximatively proven, that the contagium of enteric fever has its essence, or part of its essence, in the microphyte which Dr. Klein has discovered." He seems, however, to be quite ignorant of the fact, that Prof. Salisbury, of Cleveland, in 1868, described, figured, and named, a fugous growth (*Biolysis typhoides*, Salisbury), which develops on and in the intestinal mucous membrane, "and especially flourishes with great luxuriance in the agminated, and solitary glandules of Peyer." (*Microscopic Examination of Blood*, New York, 1868, p. 62.) Dr. Klein's essay is illustrated by a large number of elaborate and beautiful drawings from his pencil, which only require that they should be copies of micro-photographs, to carry strong conviction even to the minds of leading sceptics, as to "the production of general diseases by organic entities." For the details of his investigations we refer our readers to the *Monthly Abstract of Medical Science* for May, 1876.

Dr. Creighton's further research towards the etiology of cancer bears the impress of more experienced and thorough study, than was expended in the observations recorded in a previous year, and comprises a most important and elaborate examination of the evolution and involution of the mammary gland, proceeding and succeeding lactation. For this the profession owe him a real debt of gratitude, and his earnest and ingenious efforts to deduce from these physiological processes conclusions which shall bolster up his favourite theory, commands at least our admiration. Adopting the doctrine that the secretion of milk during its subsidence, in a mammary gland undergoing involution, is demonstrably a process of vacuolation of the glandular-epithelium (production of signet-ring cells), he asserts, that this vacuolation is really *endogenous cell formation*, and further maintains, that near the close of the involuting process, this endogenous cell formation results in the production of solid yellow granular protoplasm instead of lacteal fluid. In this way are formed what our author calls *the very remarkable large yellow pigmented cells*, which constitute, he says, the waste products of the process of involution during its last stage, are normally removed by means of the lymphatic circulation,

and, after undergoing purification or rejuvenescence, are utilized as white blood corpuscles (!). Finally, from observing in certain mammary tumours these large yellow pigmented cells, arranged in rows and alveolar groups in the extra-acinous fibrillar tissue, where they occupy the interfascicular or lymphatic spaces, he arrives at the "strongest presumption that the cells of the scirrhus, are of the same origin and subject to the same influences as the pigmented cells, which are known beyond all doubt to be the waste products of a feeble degree of the secretory activity." As substitutes for Virchow's doctrine of the origin of cancer cells (from proliferating connective tissue corpuscles), we have, therefore, that of Koster, (from germinating endothelium of lymphatic channels), that of Classen (from emigrating white blood corpuscles), and thirdly, that at present under consideration (from yellow pigmented cells and their derivatives). Whilst this latter theory seems to us less probable than either of the others, it certainly merits, and we trust will receive, the careful examination of pathologists and microscopists generally.

Dr. Thudicum's researches in physiological chemistry, are represented in this volume by a brief "provisional statement" in regard to new alkaloids found in muscular tissue, milk, urine, etc., which, in the present form, possesses little of general interest to medical practitioners, but the sixth and last paper by Dr. Baxter, giving the results of his experimental study of certain disinfectants, has such a real and practical value that, though we regard the limits of this notice already, perhaps, overstepped, permit us only to epitomize his more important conclusions, which he does not claim are altogether final.

1st. Carbolic acid, sulphur dioxide, potassic permanganate, and chlorine, are all true disinfectants but in various degrees.

4th. The presence of *free* chlorine or *undecomposed* permanganate, in a liquid to be disinfected, after chemical action has ceased, when these agents are used, is the only assurance that disinfection is accomplished.

5th. A virulent fluid must be rendered strongly acid by sulphur dioxide to insure its disinfection thereby.

6th. At least 2 per cent. by weight of pure carbolic acid must exist in a virulent liquid to secure its disinfection by this agent.

8th. Aerial disinfection, as commonly practised in the sick-room, is either useless or positively objectionable, owing to the false sense of security it is calculated to produce.

9th. Aerial disinfection can be best obtained by saturating the space to be disinfected with chlorine, or preferably sulphur dioxide, for at least an hour, and this in the absence of such gaseous compounds, as might combine with or decompose the disinfectant, and so far impair its energy.

10th. When thorough disinfection of a mass of solid or liquid matter is impracticable, since all contagia probably disappear sooner or later under the influence of air and moisture, we must be careful not to hamper this desirable process of decay, by the injudicious use of antiseptics.

11th. Dry heat applied with due precautions is probably the most efficient of all disinfectants.

And yet, after all, in the words of Dr. Simon, which close this useful brochure, "it is to cleanliness, ventilation, and drainage, and the use of perfectly pure drinking water, that populations ought mainly to look for safety against nuisance and infection. Artificial disinfectants cannot properly supply the place of these essentials; for, except in a small and peculiar class of cases, they are of temporary and imperfect usefulness."

J. G. R.

ART. XXVIII.—*Cyclopædia of the Practice of Medicine*. Edited by Dr. H. VON ZIEMSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. IV. *Diseases of the Respiratory Organs*. By Dr. FRAENKEL, of Berlin; Prof. VON ZIEMSEN, of Munich; Prof. STEINER, of Prague; Dr. RIEGEL, of Cologne; and FRAENTZEL, of Berlin. Translated by J. Burney Yeo, M.D., of London; J. Solis-Cohen, M.D., of Philadelphia; A. Brayton Hall, M.D., and George M. Lefferts, M.D., of New York; and Edward W. Schauffler, M.D., of Kansas City. ALBERT H. BUCK, M.D., New York, editor of American edition. 8vo. pp. xix., 805. New York: William Wood & Co., 1876.

THE present volume of this valuable series contains articles on almost all those diseases of the respiratory organs not discussed in Volume V., which was noticed in the last number of this Journal. It, therefore, includes chapters on Diseases of the Nose and Pharynx, by Dr. Fraenkel; on Diseases of the Larynx, by Dr. Von Ziemssen; on Croup, by Dr. Steiner; on Diseases of the Trachea and Bronchi, by Dr. Riegel; and on Diseases of the Pleura, by Dr. Fraentzel.

It may, indeed, be a question whether the discussion of diseases of the nose would not be more appropriate in a treatise on surgery than in one on the practice of medicine, since when at all severe they but rarely continue under the physician's care. They are often, however, even in their milder forms, very troublesome to the patient, and occasionally a source of mortification to him, and of annoyance to his friends. We think that Dr. Zeimssen has, therefore, done wisely in devoting a large portion of the present volume to their consideration. The task of describing them has been consigned to Dr. Fraenkel, a gentleman whose name is doubtless familiar to many of our readers through his contributions to the medical journals. It would, of course, be impossible to follow Dr. Fraenkel through his description of the various forms of apparatus used in the examination of the nose and pharynx, and, in fact, this would be unnecessary, as all the apparatus he recommends for this purpose is already in use by specialists in this country.

Although diseases of the nose are rarely the direct cause of death, they not infrequently interfere with nutrition by interposing an obstacle to the proper performance of the respiratory function. This is especially the case with children at the breast, who are, as is well known, often prevented from suckling in consequence of closure of the nostrils. But the impossibility to breathe through the nose will often also interfere very materially with their sleeping. Kussmaul has shown that in young healthy infants the mouth is generally closed during sleep, or, if open, takes no part as an air-passage, because the tongue lies in contact with the hard palate. If, therefore, the nose becomes obstructed through coryza, or from some other cause, it is very easy to understand that dyspnoea must occur and continue until the tongue learns to abandon its physiological position.

The attacks of asthma, which so frequently accompany tumours of the nose in adults, are not so easy to explain. They are probably due to reflex action, as Kratschmer has proved that an irritant acting upon the Schneiderian membrane produces a narrowing of the nostrils, and an arrest of breathing in the act of expiration, as well as an arrest of the heart's action, which is followed by a series of retarded pulsations. This reflex action originates, not in the olfactory, but in the trigeminus nerve. The

tumours, moreover, especially during sleep, prevent the free access of air to the lungs, and consequently the proper interchange of gases in the lungs—a condition which, according to Hænisch, favours the occurrence of reflex action.

Another subject which Dr. Fraenkel discusses at some length is the contagiousness of coryza. Without positively committing himself, he evidently leans very strongly to the opinion that it may, under certain circumstances, be communicable, although he admits that up to this time all efforts to inoculate it have been fruitless. On the other hand, he says the nose shows itself unequivocally susceptible to the contagion of gonorrhœal matter, and he is inclined to think that the coryza of new-born children originates in the same way as *ophthalmia neonatorum*, that is, through infection of the nasal mucous membrane by the vaginal secretions of the mother during birth. In all cases, he adds, of coryza neonatorum that he has investigated, he has been able to show the existence of leucorrhœa in the mother.

“It appears, then,” he says in conclusion, “that the nose does not differ from other mucous membranes in the capacity for being infected by secretions. Nor is there any ground for considering the secretions of the Schneiderian membrane as less infectious than those formed elsewhere. The question of the contagiousness of coryza, then, in spite of the negative result of experiments, must be considered as one and the same with the question of the contagiousness of catarrhal or purulent secretions in general, and in the light of clinical observations must, for the present, be answered in the affirmative; especially as regards purulent secretions.”

Dr. Fraenkel recommends that coryza should never be neglected, as it is apt to be by physicians generally, who regard it as too trivial an affection to demand much notice. When it becomes chronic it is much less amenable to treatment than in the acute stage, and if allowed to run on it often induces a very much impaired condition of health, which will generally continue until after the disappearance of coryza. The treatment he recommends for its relief is very much the same as is in use here, and, therefore, does not call for special commendation herein.

The chapter on diseases of the larynx, by Von Ziemssen, possesses particular interest for the specialist. The general practitioner will, perhaps, on the other hand, agree with us that the author attaches too much importance to the use of the laryngoscope; urging a recourse to it even in cases where the general and local symptoms would seem to indicate with sufficient clearness the nature of the disease, and where it can scarcely aid us in the treatment. Unquestionably the laryngoscope has been of immense service to us in the study of the pathology of the larynx, but its use requires great skill on the part of the operator, and also some tolerance on the part of the patient, who frequently has to be gradually accustomed to its introduction into the throat. In acute cases, therefore, where it is especially liable to cause irritation, it need scarcely be resorted to. The ophthalmologist, too, will, we think, be disposed to dispute Von Ziemssen's assertion that, great as have been the improvements in diagnosis and treatment effected by the ophthalmoscope, they are scarcely as striking as those gained by the laryngoscope.

Dr. Steiner, who is the author of the article on Croup, rather surprises us by saying, in one place, that croup and diphtheria are “only varieties and modifications of one and the same process, which, in consequence of special influences and collateral causes, as yet imperfectly understood, makes its appearance at one time as croup, at another as diphtheria—now in a sporadic form, now as a wide-spread epidemic, now as a primary, and

now again as a secondary affection." And then a few pages further on, that "primary true croup is not a contagious disease," while "diphtheritic croup possesses this quality in a marked degree." If this opinion be correct, and we think the weight of testimony is in favour of it, there is here ground enough for distinction. The virulence of contagion may be modified by circumstances, but it is inconceivable that a contagious disease should ever wholly lose the power of propagating itself.

Dr. Steiner is an advocate of the view that there is a certain hereditary and family disposition to croupous inflammation in general, and to laryngeal croup in particular, instancing two families, in one of which all four, and in the other all three children died of membranous croup, within five years in one case, and within four years in the other. He regards the dyspnœa of croup as the combined result of several causes acting together or in succession. The most important of these he believes to be the mechanical one, viz., the swelling, relaxation, and intense congestion of the mucous membrane of the larynx on the one hand, and the false membranes and the muco-purulent secretion on the other. But a part of the dyspnœa, he thinks, is to be ascribed, in many cases, to the false membranes and to accumulations of muco-pus situated in the lower air-passages. The correctness of this conclusion is shown by the fact, that after tracheotomy the dyspnœa sometimes continues to be as urgent as before, although the larynx no longer takes part in the respiratory process. To these purely mechanical causes may be added another of subordinate importance—the paralysis of the laryngeal muscles.

Dr. Steiner apparently adopts E. Wagner's views in regard to the histology of the croupous exudation. The membrane, he says, "as it begins to form, is composed of a thick network of delicate, very fine threads, whose interstices are occupied by numerous bodies essentially like ordinary pus-corpuscles. This network is produced in croup, just as in diphtheria, by a peculiar metamorphosis of the epithelial cells, which consists in the cells at first becoming enlarged, and then developing long prolongations, by the coalescence of which a network is formed, which acts as a matrix for the newly-formed cells. According to F. Steudener, on the other hand, the croupous membrane consists of an exudation produced by the migration of numerous white corpuscles from the vessels of the mucous membrane, and the direct formation of fibrine from the transuded blood-plasma. The author also refers to the opinions of Oertel, Hallier, and others—only, however, to condemn them.¹ These gentlemen, it will be remembered, believe that they have discovered the nature of the croupous diphtheritic exudation in the generation of fungi; but Dr. Steiner regards the presence of these fungi upon the exudations as only accidental, and not as an essential part of the disease.

When speaking of the diagnosis of croup, Dr. Steiner says: "Experience shows that children who are subject to attacks of hoarseness and barking cough after catching cold, almost never suffer from genuine, but often from false croup." If this be really so—for, we confess, we have doubts of its absolute correctness—we certainly have in it a valuable aid in distinguishing the two affections.

We do not find much to comment upon in the author's remarks upon the treatment of this disease. He recommends, as soon as a membrane is detected in the throat, the use of gargles containing from 12 to 50 grains

¹ See notice of the first volume of this series in the number of this Journal for April, 1875.

of chlorate of potassa to the ounce, according to the age of the patient. If he be too young to gargle, the above-mentioned fluid may be injected into the throat, or the parts may be touched with lunar-caustic. The author also speaks favourably of various remedies which are believed to act as solvents of the membrane, but condemns the abstraction of blood either generally or locally by means of leeches. On the other hand, he considers that an antiphlogistic effect is produced by the rational use of cold, preferably in the form of frequently changed cold compresses about the neck, which are to be kept applied as long as the disease presents the character of an inflammation, or the exudation continues to spread. Their use should be discontinued as soon as the symptoms of carbonic acid poisoning or depression occur. Mechanical emetics are also recommended with a view of bringing about a dislodgment of the false membrane. They should be given in full doses, and repeated every fifteen minutes until they have operated freely. Dr. Steiner says, that, notwithstanding that he has given with this view large doses of copper and antimony, he has never known gastritis produced by them. Croupous diphtheritic gastritis may occur as a complication of croup, but it has no connection with the use of emetics.

As soon as symptoms of carbonic acid poisoning appear, the author recommends us to have recourse at once to tracheotomy, believing that very often the operation is so long deferred that the time when it will be of service is allowed to slip by. In addition to establishing a provisional air-passage while the danger of death from laryngeal stenosis lasts, he tells us that "when properly performed, *tracheotomy may be a safeguard against the further spread of the croupous process.*"

Dr. Riegel's contributions to this volume include an article on bronchial catarrh, which, although exhaustive, we shall not notice in detail, simply because the frequency of the occurrence of this disease renders it difficult to say anything concerning it which would be new. He gives the following explanation of the process of "catching cold"—an expression which is often used without a very clear idea of its meaning. The experiments of Rosenthal have shown "that if the heated body, with its enormously dilated superficial vessels, is suddenly exposed to cold, there is not only a considerable amount of heat abstracted, but the blood of the superficial parts of the body so suddenly cooled now courses through the internal organs, and cools these off much more suddenly than would be the case from the simple influence of cold without the previous influence of greater heat. The cooling off, therefore, is not only more considerable, but also much more rapid. This sudden cooling may then, in itself, act as an injurious influence, and excite a disease in this or that organ, especially if it is already enfeebled, and hence less resistant."

According to our author, comparatively more legitimately born children die of respiratory diseases in the first year of life than illegitimate children. While not overlooking the fact that the latter class, in consequence of inherited vices of constitution, succumb in greater number to diseases of mal-nutrition, he ascribes this preponderance of respiratory diseases amongst the more favourably placed legitimate children to the too great care which is exercised by anxious mothers to guard them against cold, by which their resisting powers are materially diminished.

In the treatment of bronchitis, especially when the tubes are filled with liquid which the patient has not strength to expectorate, Dr. Riegel recommends the use of emetics, among which he has found the muriate of apomorphia especially useful, possessing the advantage over most of the

others of its class of being capable of subcutaneous administration. It acts very promptly, he says; is always certain, and does not produce much nausea. Besides this, there are no unpleasant after-effects from it, the last trace of any disagreeable sensation passing off in the course of a few minutes. These properties render it a very useful remedy in the treatment of croupous bronchitis, in which disease the author specially recommends it. He also advises the use of cold water externally whenever the thermometer indicates the presence of a high degree of fever.

Dr. Riegel apparently adopts Kretschy's view that the membrane in croupous bronchitis "is formed by the transudation of a fluid albuminous substance (fibrin) hardening rapidly after its secretion, and the exudation of white blood-corpuscles, and that it is not due to a peculiar metamorphosis of the epithelium of the bronchial mucous membrane, in which the epithelium forms the cellular elements by endogenous formation of new cells, and the fibrinous framework out of the remaining cellular substance." In addition to emetics the author recommends the employment of remedies calculated to soften and loosen the false membrane, such as inhalation of lime-water, lactic acid, and the carbonates of the alkalies. He refers favourably to the use of iodide of potassium for the same purpose. Patients who have shown that they are liable to attacks of this kind should be carefully guarded against exposure to all the causes of bronchitis in general, and should take remedies applicable to scrofula, anæmia, and so forth, if any one of these conditions be present. There are, however, no means known by which attacks can be certainly prevented.

It would carry us far beyond the limits assigned to this notice were we to attempt to follow Dr. Riegel through his elaborate discussion of the various theories which have been proposed to explain the occurrence of bronchial asthma. Without definitely announcing his adhesion to any one of them, he gives us good reasons for preferring that which refers the symptoms to spasm of the bronchial tubes, which has recently found an eloquent champion in Biermer, and which is, on the other hand, opposed by Wintrich, who, asserting that a nervous asthma produced by spasmodic contraction of the smooth muscular fibres in the lung, is not possible, and that such a condition does not exist, teaches that the phenomena of asthma depend upon a momentary impediment to the respiration, due either to tonic spasm of the diaphragm alone, or a similar spasm of the diaphragm and the respiratory muscles together, in connection with which spasm of the glottis may or may not be present. The author refers to Bert's recent experiments, which are confirmatory of Williams's, showing that distinct contractions of the bronchi are caused by galvanization of the lungs as well as of the vagus. These, he thinks, render it no longer doubtful that the bronchial muscles are excited to contraction by irritation of this nerve.

Wintrich lays great stress on the depressed position of the diaphragm and the dilatation of the lungs which are always present during paroxysms of asthma, and which he cannot associate with a spasmodic contraction of the bronchi. Biermer, who recognizes the position of the diaphragm as a constant occurrence in bronchial asthma, says that in real bronchial spasm the inspiratory force becomes the antagonist of the bronchial muscles, and drives the air with force through the constricted bronchi into the alveoli. This air, however, escapes but slowly and incompletely, despite the assistance of all the expiratory forces in expiration, and hence follows distention of the lungs.

"A part," he says, "from the improbability of a diaphragmatic tetanus continuing for hours, Biermer maintains that he has always been able to satisfy himself that the diaphragm contracts rhythmically during the asthmatic attack. The indistinctness of its movements is explained by the obstacle to its elevation during its relaxation furnished by the dilatation of the lungs." "The exception taken by Wintrich," he continues, "that the spasm of the bronchial muscles must be overcome by the greater antagonistic forces of expiration, such as elasticity of the lungs and thorax, the expiratory muscles, and the like, is rejected by Biermer, who denies that the role of the expiratory forces is antagonistic to the bronchial muscles. The expiratory pressure, moreover, acts by no means only upon the contents of the alveoli—the bronchial spasm would be readily overcome thereby, as a matter of course—but acts upon the broncheoli also. The bronchi, during expiration, are subjected to the general expiratory pressure and to the pressure of the morbid contraction of the bronchial muscles; and it is thus understood how the compressibility of the broncheoli favours their further closure, under the influence of varied expiration rather than their further dilatation."

The fact that catarrhal symptoms attend every attack of asthma shows that, in seeking an explanation for the phenomena of this disease, congestion of the respiratory mucous membrane must not be left wholly out of consideration. In fact, Störck has recognized with the laryngoscope this condition of the upper air passages. But it is going too far to say with Weber that the collective manifestations of asthma are most naturally explained by "the supposition of a tumefaction of the bronchial mucous membrane in consequence of dilatation of its bloodvessels through vasomotor nervous influence." The author also refers to the theory of Leyden, who has found in the expectoration of asthmatic patients numerous colourless octahedral crystals, which, he believes, by irritating the peripheral terminations of the vagus nerve in the bronchial mucous membrane, and hence exciting reflex spasms of the muscles of the smaller bronchi, occasion all the symptoms.

In addition to those already noticed, Dr. Riegel is the author of Chapters on Tracheal and Bronchial Stenosis, and on Foreign Bodies in the Trachea and Bronchi, which want of space prevents us from noticing in detail.

If Nothnagel is right in maintaining that irritation of the pleura does not excite cough as his experiments on the lower animals have gone to show, it is difficult to know to what cause to assign the occurrence of this symptom in pleurisy. Dr. Fraentzel offers the following explanation. As soon, he says, as there is any effusion, some slight pressure must be exercised on the lung tissue and the bronchi; a pressure, however, which can still be overcome by the act of inspiration. Hence arises an unnatural strain on the lung tissue and the finer bronchi, and this excites coughing. The same cause of strain will arise in cases of considerable effusion when the patient changes his position, which, as is well known, almost invariably causes him to cough. If the lung is completely compressed by the pleuritic effusion, he continues, then no actual strain on the alveoli or the bronchi can arise. In such cases there is no cough, but it returns when the effusion decreases in quantity, and quite violently if this occurs suddenly, as, for instance, in puncture of the chest.

Dr. Fraentzel considers the condition of what he calls the *half-moon shaped region*¹ as of the greatest diagnostic value in extensive left-sided

¹ Inasmuch as Dr. Fraentzel thinks that the diagnostic value of this semilunar space is much too highly estimated in manuals and text-books, we append the following description of it, taken from the text:—

"We have learned from Traube's researches, that at the anterior base of the

pleuritic effusions. The greater the amount of such an effusion the more it must press the diaphragm down and the smaller this space becomes. If the effusion is not as yet very great, and the diaphragm therefore not yet actually displaced, the percussion note in the anterior part of the chest may be obscured, while this semilunar space still remains unchanged in extent; with increase of effusion this space diminishes, and finally disappears. A re-appearance of the semilunar space will, on the other hand, indicate a decrease in the quantity of effusion.

Dr. Fraentzel attributes the sudden deaths occasionally occurring in cases of pleurisy with effusion to torsion of the great bloodvessels, especially of the ascending cava. This may, through the displacement of the heart, suffer an almost rectangular twist at the point where it perforates the central tendon of the diaphragm to reach the pericardium, a position at which it is firmly attached to the margins of the quadrilateral foramen. Such a twist of the inferior cava, we can readily understand must lead to an imperfect filling of the heart with blood, and hence, since the mass of the blood is already very much diminished in cases where the effusion has been rapidly poured out, to syncope. In the cases in which this accident has come under the author's observation, the effusion has been left-sided. This accident is very frequently the result of a sudden movement by which the twisting of the vessel is very much increased.

The author is an advocate for the active treatment of pleurisy in the first stage, believing that we have the power thereby of reducing the inflammation and of bringing about a complete absorption of the deposited exudation. He recommends the local abstraction of blood by means of leeches and cups, and even goes so far as to advise venesection to the extent of from six to eight ounces in cases marked by very high fever and by rapidly increasing effusion. This is to be followed by calomel and digitalis, and by nitrate of potassa, and in some cases by mercurial inunction and by counter-irritants. Quinia is also, in his opinion, possessed of valuable antiphlogistic properties, and so are drastic purgatives, but he does not consider the application of cold bandages or ice bladders advisable because the cold very often brings on violent fits of coughing, which are very apt to increase the inflammatory action. On the other hand, after the removal of the effusion by operative measures, he is in the habit of applying a small ice-bladder over the situation of the wound for twenty-

left side of the chest there is a region where the percussion note is tympanitic. This region is half-moon shaped, that is to say, it is bounded inferiorly by the margin of the thorax, and superiorly by a curved line whose concavity is turned downwards. This space, which for want of a better name we call the *half-moon shaped region*, begins in front below the fifth or sixth costal cartilage, and extends backwards along the margin of the chest as far as the tip of the ninth or tenth rib. Its greatest breadth is from four inches to four inches and a half.

"The sound in this region, in the natural condition of the stomach and large intestine, is distinguished from that of the lung above it not only by its tympanitic quality, but also by its higher pitch. We must not, however, percuss too strongly if we wish to define accurately this half-moon shaped space, for with very strong percussion we may get a note of tympanitic quality even higher up than this.

"Under normal conditions this semilunar space will be diminished by deep inspiration, as the lung is thereby increased in volume, and with the diaphragm descends lower. From this circumstance we can always conclude that the anterior inferior border of the left lung is movable.

"Conversely, a considerable increase in the width of this space during respiration is usually connected with immobility of the lower border of the left lung, and is one of the most important signs of the existence of contraction of this lung."

four or forty-eight hours. He makes no allusion to the treatment proposed by Roberts of strapping the affected side with adhesive plaster, as in fracture of the ribs, which often, by limiting movement, gives great relief to the patient.

It is with some surprise that we learn from Dr. Fraentzel that there are many physicians in Germany, who still hesitate to have recourse to paracentesis thoracis in suitable cases. He is himself an earnest advocate of this operation, resorting to it in acute cases, where there is danger to life from immediate suffocation, and when the effusion is very large, *i.e.* when there is absolute dulness over the whole of one side anteriorly, or when there is only a small strip where the dulness is not absolute, and this yields a high-pitched tympanitic note; "for we are taught by experience," he says, "that in the case of such extensive effusions death may often supervene quite suddenly either from syncope or from acute œdema of the sound lungs." Again, in extensive effusion absorption will frequently go on much more briskly after the removal of a portion of the liquid, since generally, in these cases, absorption is prevented by the pressure which the pleuritic effusion exerts on the orifice of the lymphatics. Moreover, if absorption is delayed, patches of caseous pneumonia are very readily developed in the compressed lung, to which miliary tuberculosis is sometimes added, or very thick pleuritic membranes remain behind as residua of the effusion, and these forever impede the re-expansion of the lung, and generally lead to contraction of the chest. It needs scarcely be added, that he recommends us to puncture whenever we are satisfied that the effusion is purulent, no matter whether it is large or small in amount. Very full directions are given as to the proper method of performing paracentesis, to which we must, as it would occupy more space than we have at our disposal to reproduce them here, refer the reader who is specially interested in this subject. If the fluid reaccumulates, in cases where the effusion is fibrino-serous he advises us to repeat the operation, and if again unsuccessful in effecting a cure, no longer to put off doing the radical operation. After an incision has been made, preferably in the fourth or fifth intercostal space, midway between two ribs, and parallel to them, and the effusion has been cleared out of the pleural sac, "we must proceed," Dr. Fraentzel says, "to cleanse this cavity, and this we can do by introducing two Nélaton's catheters having several openings at their lower ends, as deeply as possible into the pleural cavity, in the direction of the spine, and then through one of the catheters allow pure distilled water of a temperature of 100° to 103° F., out of an irrigator, to run in till the pleural sac is full, then withdraw this fluid again through the other catheter by means of a double-cock exhausting syringe, and repeat this cleansing process until the water withdrawn from the pleural cavity is quite pure. . . . The wound is then to be dealt with in the following manner: We place in the wound a silver canula which can pass easily between the two ribs, but which is wide enough in the other direction to allow two of Nélaton's catheters of medium size to pass through it." This will allow the frequent cleansing of the cavity, which, in the author's opinion, should be done twice daily. He also recommends the use of *Lister's protective* as a covering to the canula and wound, and whenever this is removed, that the spray of carbolic acid should be directed upon the wound.

Dr. Fraentzel is also the author of articles on Hydro-, Hæmo-, and Pneumothorax.

J. H. H.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIX.—*St. Thomas's Hospital Reports*. Edited by Dr. BRISTOWE, Dr. JOHN HARLEY, and Mr. WAGSTAFFE. New Series. Vol. V. 8vo. pp. xiv., 451. London: J. & A. Churchill, 1874.

THE fifth volume of the new series of the St. Thomas's Reports contains twenty-two articles, and is illustrated by three charts and six lithographic plates. As is our custom, we shall notice analytically its contents, and first those papers which more particularly pertain to medicine.

The opening paper is an elaborate clinical *Report of Cases of Pneumonia*, in which Dr. THOS. B. PEACOCK, Senior Surgeon to the Hospital, carefully analyzes one hundred cases of idiopathic lobar pneumonia, treated in public practice. The results closely correspond with those deduced by other observers.

The next paper, *On Continued Currents in Fluids as shown without the Admixture of Solid Particles*, is a record of the continuation of Mr. GEORGE RAINEY's physical experiments.

In *A Contribution to the Subject of Cremation*, Mr. ALBERT J. BERNAYS suggests burning the *soil* rather than the *dead*. The body is recommended to be placed in a coffin made of perforated iron plate, and lowered into a grave which is to be filled with clay previously burned, and thus rendered more capable of absorbing gases and of slowly burning them. The advantage claimed for the iron coffin is that its oxidation would be evident in the drainage from the cemeteries, and the power of ferric hydrate in aiding disinfection would be of value.

Dr. JOHN HARLEY, Lecturer on Physiology and Assistant Physician at St. Thomas's Hospital, in a very interesting paper, presents some observations *On the Action and Use of Aconitia*, made with the view of elucidating the precise action of aconite, and of ascertaining whether or not it exercises any control over the febrile state. The experiments were made on the horse, cat, and man, and the following conclusions are deduced from them.

"1. Aconite affects a portion of the cranio-spinal axis in the same manner that strychnia affects the whole. It produces an excitation which results in intermittent spasm.

"2. The focus of the action of aconite is the medulla about the roots of the pneumogastric, hypoglossal, and spinal accessory nerves. Thence its influence radiates along the cranio-spinal axis with rapidly diminishing intensity, as far forwards as the centres of the third nerve, and as far downwards as the origin of the phrenic. The centres about the focus of action are more or less in a state of constant excitation, while those towards the limits are sometimes in a state of depression and sometimes in one of excitation; thus, for example, during a spasm, the pupils may be completely contracted, but in the intervals, and always after moderate doses, they may be slightly dilated, or, at least, the muscular apparatus engaged in accommodation is so far enfeebled that dimness of sight and giddiness result as after conium. And so also with the diaphragm; it is enfeebled by small doses, and is alternately affected by spasm and exhaustion after large ones. Occasionally, however, and during the more violent suffocating spasms, the muscles of the whole of the anterior part of the

body, including the anterior extremities, are involved in the attack (see Obs. 3, p. 150, and Obs. 7, p. 161).

"3. Beyond the limits above indicated aconite exercises a depressing influence on the cranio-spinal axis, almost amounting to paralysis.

"4. The action of the alkaloid on the sensory function appears to be coextensive and coequal with that on the motor function, the area for intense action having the same limits, beyond which the anæsthesiant action rapidly diminishes in intensity. Thus, while the head and neck are deprived of sensation, the rest of the surface is only partially affected, and the sensibility of the lower parts of the body only slightly or not at all disordered.

"5. Apart from the derangement of accommodation, from spasm or enfeeblement of the muscular apparatus of the eye and the ear, the senses of sight and hearing were unaffected; the latter, indeed, was *apparently* wholly unaffected. There was no evidence of any impairment of smell. Taste was, without doubt, greatly disturbed, both on account of its relation to common sensation, and of the deep implication of the fifth nerve.

"6. Beyond the slight depression of function resulting in somnolency (after medicinal doses and in the intervals of the paroxysms which follow poisonous ones) aconite has no direct influence on the brain, and the effects produced by asphyxia have usually only a brief duration at the end of a paroxysm or immediately preceding the death of the animal. The intense distress of impending suffocation produces, however, a total disregard for everything else but the desire for relief, and thus the animal rages frantically about as if actually delirious.

"7. The sympathetic nerve is unaffected. At the moment of death the pupils dilate vigorously; and after death the heart may continue to pulsate,¹ or, if the right heart be arrested by distension, its action may be revived by depletion. The contracted left heart is still, only because it is empty."

From the evidence adduced, Dr. Harley maintains that the heart is only secondarily affected, and as a consequence of the respiratory difficulty.

"8. Death results from asphyxia and progressive collapse of the lung, the former being due to the spasmodic closure of the respiratory passages and paralysis of the muscles of inspiration, and the latter to paralysis of the muscles of inspiration and notably of the diaphragm, which is tucked up higher and higher by the intermittent efforts of the upper intercostals, the scaleni, and sterno-mastoid muscles.

"If, however, the heart be weakened by disease, it may be unable to sustain the strain imposed by obstructed inspiration, and death would then result from syncope, and thus the terrible battle would be sooner ended.

"An examination of the published cases of poisoning by aconite will, I believe, show that the action of the poison is uniform and strictly in accordance with the foregoing facts and explanations."

As regards the influence of aconite on the febrile state, Dr. Harley, from a study of fifteen cases of scarlatina treated with aconite, failed to discover that the drug exercised any appreciable influence on the course of the fever. In twenty cases of typhus—a disease in which, owing to the great prostration and the tendency to pulmonary congestion, the action of aconitia might be expected to be prominently displayed—Dr. Harley found that "the aconite cases passed through the disease remarkably well." The general conclusion derived from the cases is, that, if it be conceded that aconite ameliorates the febrile condition, it does not much control it; further, it cannot in any degree anticipate or cut short the pyrexial stage in a disease against which, if it did possess the antifebrifuge properties ascribed to it, its influence ought to be most marked.

¹ This I find is strictly in accordance with Dr. Fleming's observations: "Inquiry into Physiological and Medical Properties of Aconite," p. 91 et seq.

MR. ALFRED W. BENNETT contributes a short paper *On the Medicinal Products of the Indian Simarubaceæ and Burseraceæ*, which is followed by an interesting contribution from the pen of Dr. J. S. BRISTOWE, entitled, *Cases Illustrating Various Forms of Erythema and their Relations with Lupus Pemphigus and other Affections*. The chief value of the paper is in the notes of the cases which accompany it. Indeed, as the author himself says, there is "little, or nothing, novel in the views" expressed.

MR. WILLIAM M. ORD presents *Some Points in the Natural History of Uric Acid and Urates*, and Mr. WALTER VERDON is the author of a short paper *On the Intercommunication of Nerves and the Physiological Advantages gained thereby*. The facts, Mr. Verdon thinks, can be grouped together, so as to present three propositions: 1. That structures bearing a functional relation to one another are generally supplied by the same nerve; 2. That in regard to parts thus related, though not supplied by the same nerve, communications are often established between their respective cerebro-spinal nerves through ganglia; 3. That certain branches of the sympathetic have, in their distribution, a definite relation to that of the cerebro-spinal nerves, arising from the same region.

The volume closes with the *Report of the Obstetrical Department*, with *Statistics and Cases*, by HENRY GERVIS, M.D.; and the *Medical Report*, by the Medical Registrar, Mr. W. S. GREENFIELD. From the latter we learn that 1240 cases were treated during 1873 in the medical wards—a number which we should have expected to furnish a larger amount of interesting clinical experience than we find recorded in the volume before us. I. M. H.

The first paper of special interest to surgeons is contributed by Mr. WILLIAM MACCORMAC, F.R.C.S., who writes *Respecting a Case of Movable Body in the Knee-joint*. The movable body in this case was still attached to the inner condyle of the femur by a narrow pedicle, and as it was difficult to fix it during the operation for its removal, Mr. MacCormac adopted the ingenious plan of first pinning it down to the condyle by transfixing it with a small trocar. He then divided the capsule of the joint subcutaneously, and, having removed the trocar, succeeded in rupturing the pedicle, and extruding the movable body by forcible pressure with his thumbs. The "loose cartilage" was thus lodged in the periarticular areolar tissue, where it underwent rapid absorption. The plan of transfixing the movable body to keep it in position appears to have been suggested by Dieffenbach's method of pinning the body to the synovial cul-de-sac, in hope of causing the formation of adhesions.

On the Corpus Morgagni, with reference to Diseases of the Testicle, is the title of the next surgical paper, which is furnished by the Surgical Registrar, Mr. S. OSBORN. The object of this paper is to show that the body or hydatid of Morgagni, a fœtal structure which constitutes the upper part of the so-called Müllerian duct, is the seat of the "encysted hydrocele," as well as of certain solid tumours of a fibrous or cartilaginous nature, and of dermoid cysts. Mr. Osborn's paper is illustrated with several well-executed wood-cuts.

Surgical Experiences in Military Hospitals in Japan form the subject of the next article, which is from the pen of J. B. SIDDALL, M.D., late Medical Officer to H. B. M. Legation in Japan. This is quite an interesting paper, though a considerable portion of it can hardly be regarded as suited for a volume of Hospital Reports. Japanese patients, according to Dr. Siddall, excel in the qualities of resignation and quiet endurance, but are deficient in nervous power, and do not readily recover from the shock of operations; it was probably on this account that his cases of severe compound fracture did

so much better under expectant treatment than when submitted to amputation. Dr. Siddall's paper is adorned with three lithographic plates, two illustrating the effects of injuries, and one showing the Japanese mode of carrying wounded men on "kagos" and stretchers.

We turn next to *Notes on the Treatment of Burns and Scalds and the Deformities they occasion, with Two Cases of Plastic Operation under the care of the Author*; by FRANCIS MASON, F.R.C.S., Senior Assistant Surgeon and Lecturer on Anatomy at St. Thomas's Hospital. This paper is meant as a supplement to that on *The Treatment of Cicatrices after Burns*, which Mr. Mason contributed to the third volume of the *Reports*, and which was noticed in the number of this Journal for October, 1873, p. 489. The first portion of the present communication is devoted to an account of various topical remedies which have been and are now employed in the treatment of burns and scalds, the author expressing his preference for a mixture of whiting and vinegar, applied during effervescence. In the latter part of his paper, Mr. Mason describes different plastic operations which have been suggested for the relief of the deformities which follow burns, and narrates two cases of his own, in which he successfully resorted to the transplantation of a flap of skin, much after the manner practised by Carden and Mütter. Mr. Mason's paper is illustrated with seventeen wood-cuts.

The next article is communicated by Mr. F. LE GROS CLARK, F.R.S., Consulting Surgeon to the Hospital, and describes a case of *Partial Dislocation of the Head of the Humerus Backwards*. Mr. Clark saw the patient two hours after the occurrence of the accident by which he was hurt, and found that the head of the bone had shifted its position directly backwards, and rested on the posterior edge of the glenoid cavity. Reduction was readily effected by raising the elbow from the side, and rotating the humerus, when the head of the bone slipped into place with an audible click. The patient made a good recovery.

On the Mechanical Structure of the Cancellous Tissue of Bone is the title of a paper contributed by Mr. W. W. WAGSTAFFE, Assistant Surgeon and Lecturer on Anatomy to the Hospital. This article, which is accompanied with twenty-eight wood-cuts, intended, we are told, for a Manual of Osteology since published by the Messrs. Churchill for the author, seems to us eminently ill adapted for a volume of Hospital Reports. Mr. Wagstaffe's observations with regard to the arched arrangement of the cancellous tissue, were, he tells us, made independently of those which he has since found in foreign works, and which have not been sufficiently noticed by English anatomists. The earliest paper which Mr. Wagstaffe quotes is one by G. H. Meyer, published in 1867, and he is evidently quite unaware that this beautiful mechanical arrangement for combining strength with lightness was clearly, though briefly, described several years before by our fellow-countryman, Prof. Joseph Leidy, in his *Treatise on Human Anatomy*, published in 1861.

Serpiginous and Phagedænic Ulceration and Quinine are treated of by Mr. JOHN CROFT, F.R.C.S., in a paper of ten pages, in which he maintains, and we think with reason, that large doses of quinia are of great value in the treatment of phagedænic ulceration, and, when this depends upon a syphilitic taint, may be suitably combined with the iodide of potassium.

Jottings from the Surgical Out-patient Room are contributed by Mr. HENRY ARNOTT. Among the cases narrated in this paper are eight of the so-called congenital tumour of the sterno-mastoid muscle, the pathology of which curious affection is, as our readers know, by no means clearly understood.

"So far as I know," says Mr. Arnott, "the anatomy of this singular swelling

had never been ascertained, or at least published, until a few months back, when Dr. Frederick Taylor showed a specimen at a meeting of the Pathological Society of London, with microscopical sections and drawings. The fibro-nuclear infiltration of the muscle in the case exhibited left the pathology of the disease still uncertain; for such a structure might as readily be the result of syphilitic change as of chronic inflammation—whether caused by injury or in some other way—or it might merely represent an erratic form of connective tissue development such as is met with in other tumours in earliest infancy.”

The objection to the theory which regards the congenital tumour of the sterno-mastoid as a neoplasm, is that it gradually disappears without any treatment, which is not the ordinary history of new growths; at the same time, it must be confessed that, in many instances, no proof of a traumatic origin can be established, and no evidence detected of a syphilitic taint either in the child or in its parents. Mr. Arnott is disposed to conclude—

“that the induration is due to some hypertrophic changes in the connective tissue in intra-uterine life, gradually subsiding after birth; but why this change should be so generally limited to one muscle, and that the sterno-mastoid, there seems as yet insufficient evidence to explain.”

To which we must add that, if the disease be really one of intra-uterine life, it is difficult to understand why it should almost never be noticed until several weeks after birth.

Among other matters of interest referred to by Mr. Arnott, is the occurrence of syphilitic gummata in front of the patella, when they are apt to be mistaken for bursal enlargements; we have known the opposite error to be committed, and a patient with solid bursal enlargement fruitlessly treated for months with large doses of iodide of potassium.

Three Rare Surgical Cases are next narrated by Mr. SYDNEY JONES, M.B., F.R.C.S. The first case was one of *Lymphangioma, with general enlargement of limb and elephantiasis of toes*. The patient was a man thirty-one years of age, and the disease appeared to have originated spontaneously. The back and inner part of the right thigh was the chief seat of the angiomatic development, the swollen lymphatics looking a good deal like varicose veins, and discharging at varying intervals a white milky fluid, sometimes to the amount of two quarts a day. The appearance of the patient is shown by a lithographic plate, and reports are appended of the chemical composition of the exuded chylous fluid, by Dr. A. J. Bernays, and of the anatomical structure of the affected skin, by Mr. Charles Stewart. Mr. Jones's other cases are one of elongation of the limb in connection with disease of the knee, and one of excision of the astragalus after dislocation of eight months' duration. Both of these cases are, like the first, illustrated by lithographs.

Notes on the Ophthalmic Department, by SIDNEY BERNAYS, Assistant in the Eye Department, are mainly devoted to a description of the conveniences for treating diseases of the eye at St. Thomas's Hospital, and of the regulations which govern the service in the eye department.

The *Surgical Report* for 1873, by CHARLES CREIGHTON, M.B., Surgical Registrar, contains as usual a number of interesting tables, with explanatory remarks upon some of the more important cases.

As a whole, the present volume does not impress us as of equal value to some which have preceded it.

J. A., JR.

ART. XXX.—*The West Riding Lunatic Asylum Medical Reports.* Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. Vol. V., 8vo. pp. 292. London: Smith, Elder & Co., 1875.

WE scarcely know what more we can say as to the general quality of this number of an excellent series, than to say that it sustains the high standard set up by its predecessors. It contains fifteen articles written by past and present officers of the Asylum, and by other physicians interested in the class of investigations there undertaken.

Dr. MERSON, Assistant at the Asylum, treats of the *Influence of Diet in Epilepsy*. He here regards food not as affecting the disease through its greater or less digestibility, but as furnishing more or less of the elements adapted to maintain or increase the nutrition of the gray matter of the brain. Believing that in epilepsy we have abnormal activity of this organ, he thinks food not especially promotive of its growth should be preferred. Upon this theory, farinaceous diet should be given, and nitrogenous withheld. To ascertain the practical correctness of this view, held by Dr. J. Hughlings Jackson as well as himself, Dr. Merson made some experiments. For four weeks, twelve patients had only nitrogenous diet, and twelve others only farinaceous. Then for another four weeks the two parties exchanged diets. The most decided results noticed were in the general mental condition. Upon farinaceous food, each group of patients became comparatively bright and active, while upon the other they in turn became heavier and more stupid. The effects upon the convulsions were perhaps less marked—certainly less uniform—but on the whole supported the preference given on theoretical grounds to the non-nitrogenous nourishment. Upon the additional theory of Dr. Jackson, that the augmented nutrition of the epileptic brain is carried on upon “a lower level” (whatever that means), phosphorus was afterwards given with farinaceous food, for a month, to twenty-two of these patients. The results were various, but not so favourable as was hoped.

Dr. FERRIER contributes an elaborate and ingenious paper upon *Labyrinthine Vertigo or Menière's Disease*. The essay was suggested by a case recently occurring in his practice.

Dr. LAWSON, Pathologist and Assistant at the Asylum, describes his experiments and observations as to the *Physiological Actions of Hyoscyamine*. In a few experiments upon small animals he noted changes produced in pulse and temperature. In two experiments on man he also observed the pupils, respiration, secretions, and general condition. The results varied greatly with different doses, and were too numerous to be particularized. In small or moderate doses the drug acts as a gentle stimulant, especially of the sympathetic and vaso-motor systems of nerves. In larger amounts it is an agent of great power, and often extremely useful in controlling maniacal excitement.

Clinical Assistant W. BEVAN LEWIS gives the results of his examinations in studying the *Histology of the Great Sciatic Nerve in General Paralysis of the Insane*. For first observing pathological changes in the sciatic nerves of general paralytics, the writer assigns the credit to Dr. Herbert C. Major, now and previously a valued officer of the Asylum, and contributor to its publications.

To the naked eye, we are told, the sciatic nerves of all general paralytics examined by the writer, have appeared smaller than natural, and flattened; and have felt soft and compressible. The neurilemma lacked its natural lustre.

The funiculi were slightly smaller than in health. Very marked atrophy of small groups of nerve-tubuli was observed in the midst of fibres perfectly healthy. With the progress of disease the wasting is more complete, and affects more fibres. The vascular network about the nerve-fibres was increased; and connective tissue—wanting, or of small amount in health—was plainly visible between the tubuli. These appearances are quite different from those found in the same nerve when degenerating from senile atrophy or from disuse of the limb.

Dr. Lewis goes on to make some inferences as to the course and character of general paralysis, which we have not space to present.

Dr. J. HUGHLINGS JACKSON presents a very valuable essay *On Temporary Mental Disorders after Epileptic Paroxysms*. Particularly glad are we to welcome such a just and temperate paper from a physician not especially devoted to the study and treatment of insanity. The public, lawyers, judges, and even medical men, seem predisposed to reject with scorn and indignation the plea of irresponsibility, when offered to save from the gallows the unhappy perpetrator of some bloody deed. The very striking cases reported by Dr. Jackson, with the strictly logical inferences which he draws from them, ought surely to cause any intelligent reader to hesitate, before ignoring or setting aside the carefully formed opinion of the expert in mental disease.

The original cases which form the text of Dr. Jackson's paper, are illustrations of absurd, improper, or unusual conduct following an epileptic seizure—which, moreover, was often so light as to attract little or no attention. The moral is, that as an epileptic may with apparent intention, deliberation, and contrivance, do trivial things of which he is actually unconscious, and which are results of disease, so also may he, with all appearances of cold-blooded and deliberate atrocity, or fiendish wantonness, commit some dreadful murder while his proper consciousness is asleep. Mental automatism is the not ill-chosen name which the writer invents for this condition of activity with suspended consciousness.

Many of these cases exhibit a degree of method, combination, and adaptation of means to ends, sufficient to insure for the sufferers, at the hands of a "common-sense" jury, death on the gallows, had they chanced to spill blood instead of committing some simple absurdity. There is, indeed, too much reason to fear that epileptics have suffered the death penalty, even of late years, for deeds which were wholly the offspring of their disease.

Dr. Jackson very properly lays stress upon the important fact that the usual visible tokens of epilepsy, even of the *petit mal*, may be wholly wanting, and the automatic act may be the first thing to attract attention. And the slightest the convulsive paroxysm is, the more elaborate is likely to be the delirium and automatism. At least as far as appearance goes, the latter phenomena replace the former.

Dr. ARBUCKLE, of the Asylum staff, gives the results of observations made by him with the ophthalmoscope, upon *The Appearance of the Retina and Choroid during the administration of various drugs*. His object was to determine whether the circulation within a healthy eye is affected by drugs. Although the rabbits were powerfully affected by the agents employed, and even killed by them, the disk, retina, and choroid showed no deviation from the normal condition. Nitrite of amyl, given to a man, did not produce the effect reported by other observers, being wholly without action upon the intra-ocular circulation. In epileptics and in general paralytics, the writer failed to find any modification of the vessels within the eye. It is scarcely needful to add, that Dr. Arbuckle believes the condition of the inner eye to be a wholly untrustworthy guide and index to the cerebral circulation.

We hardly know what to think of this apparently direct contradiction to the observations of other investigators. We have certainly been taught by other writers in these books that the circulation in the eye was a correct index to that in the brain, and greatly susceptible to the action of drugs. The editor at least deserves credit for candor and boldness in presenting both sides of the question.

Under the title of *Othæmatoma, or the Insane Ear*, LENNOX BROWNE, F. R. C. S. Edin., gives an account of that very curious effusion of blood followed by contraction and shrivelling, which is not uncommon among the chronic insane. It more commonly affects the left ear, and attacks men oftener than women. Idiots are said also to be liable to the disease. It has been supposed never to appear in persons of sane mind, but there seems now to be some little testimony to the contrary. There is no reason for attributing the disease to violence.

Dr. HERBERT C. MAJOR, now Deputy Medical Director of the Asylum, and author of many valuable papers in previous volumes, contributes a very curious and interesting paper, *Morbid Histology of the Brain in the Lower Animals*, showing the resemblances and differences between the cerebral histology of aged dogs and horses, and that of men affected with disease or old age. The changes in the brain of the lower animal seem very similar in kind to those in the human brain, though less in degree. The value of this article is much increased by the beautiful coloured lithographs of brain-sections which accompany it.

Dr. J. MILNER FOTHERGILL treats of *Cerebral Hyperæmia*, meaning that condition in which there is an increase of arterial blood passing through the brain. He emphasizes the fact that hyperæmia has two causes, general increase of blood-pressure, and a change in the tissues by which they attract or admit more blood. He then proceeds to describe the phenomena and results of cerebral hyperæmia under three heads: that due to vascular excitement, that without vascular excitement, and that produced by drugs. We query whether the latter form is not always coincident with the first or the second; but the division may be a convenient one.

H. R. OCTAVIUS SANKEY, under-graduate in medicine, describes *A New Process for Examining Brain-substance*. For a colouring agent, he finds that a peculiar aniline blue-black possesses especial advantages. He states in detail his whole method of preparing and mounting brain-sections. Some results of his study of the histology of the cerebellum are given, illustrated by two beautiful coloured lithographs.

Dr. C. F. NEWCOMBE, formerly of this asylum, treats of *Epileptiform Seizures in General Paralysis*. In some form, the majority of general paralytics suffer from such attacks at some period. The termination of the cases does not seem to be hastened by the attacks. The writer contradicts the statement of Griesinger, that seizures never occur until the disease is far advanced. A sudden fall of temperature, followed at once by a much greater rise, is observed at the onset of the paroxysms. Illustrative cases of general paralysis complicated with epileptiform attacks, are taken from the asylum records.

Dr. J. C. BROWNE, the editor, has prepared an elaborate paper upon the *Functions of the Thalami Optici*. Here again the records of the asylum furnish illustrative cases. The writer is convinced of the correctness of that view which regards the thalami as sensory centres. Destroying lesion of one of these, is distinguished by loss of general sensibility on the opposite side of body and face, and abolition of reflex excitability on the opposite side of the body. Cases are happily chosen to exhibit the different symptoms in patients whose

thalami were, or were not, found to be affected. Dr. Browne believes that his cases show the thalami to be to the sensory nerves what the auditory or olfactory ganglia are to their special nerves.

Why destruction of an optic thalamus should abolish reflex excitability, when complete removal of the brain causes its increase in parts supplied by spinal nerves, is a difficult question, and is here discussed at length, but not very satisfactorily answered.

Dr. A. M. WALLIS, formerly of this asylum, gives expression to his sense of the great value of *Chloral Hydrate in Epileptic Convulsions*. Many cases are adduced as proof. It is a little disturbing, just as we had yielded full belief to the claims of nitrite of amyl, as a controller of paroxysms, to find that drug rudely dethroned and another set up in its place. Between the two, however, convulsions ought to be well-nigh abolished.

Dr. LENNOX BROWNE has tabulated and summarized the results of a series of *Laryngoscopic Observations* made upon fifty patients affected with general paralysis. These curious and interesting examinations were made with less difficulty than would be expected, because of the diminished reflex excitability in throats of this class. The vocal organs were generally rather flabby and relaxed, with a tendency to congestion of the pharynx. Besides a want of tension, the vocal cords showed a want of co-ordinate action. The epiglottis was often unduly pendent.

We have now glanced—we fear in a very unsatisfactory manner—at the contents of this important work. The profession, and alienists in particular, owe to the West Riding Asylum management a debt of gratitude for the profound and laborious investigations there conducted. B. L. R.

ART. XXXI.—*Transactions of the American Otological Society*. Eighth annual meeting. Vol. II. Part 1. 8vo. pp. 96. Boston: Jas. Campbell, 1875.

THOUGH this number of the Transactions presents rather less original matter than the last, it contains some interesting and valuable papers, and bears ample evidence that American aural surgeons continue faithfully and earnestly at work. An elaborate *Report on the Progress of Otology* during the year, by Drs. BLAKE and MATHEWSON, occupies two-thirds of the pamphlet. More work having been done in the direction of anatomy and physiology, that section of the report is particularly interesting, and we regret that we have space only for a general outline of the nature of its contents. These comprise investigations upon the relations of the stapedius muscle, the anatomy and physiology of the Eustachian tube, the histology of the membranous semicircular canals, the comparative anatomy of the organ of hearing in locusts, grasshoppers, and mosquitos, the functions of the external ear, the analysis of composite sounds, the examination of the ear by polarized light, and the vexed question of the effects of division of the semicircular canals. The interest and instruction afforded by the clear and full *resumé* of these investigations will not be confined to aural surgeons. There is a second section of the report devoted to pathology and therapeutics, and a complete bibliography is added.

Dr. ALBERT H. BUCK, of New York, contributes a paper on *A Method of using Medicated Eustachian Bougies*. In view of the difficulty and danger attending the use of medicated fluids, he makes applications to the Eustachian tube by means of whalebone or catgut bougies armed with cotton-wool. His

favourite remedy is nitrate of silver. Cases are given illustrating the success of the treatment.

Dr. CLARENCE J. BLAKE, of Boston, details some experiments on *Intra-tympanic Pressure during Phonation*. "It is evident that under normal conditions the changes in the contour of the buccal cavity during phonation result in corresponding variations of pressure in the mouth and in the naso-pharyngeal space; and the case in which the following tests were made proves conclusively that this pressure is sufficient to be communicated through the Eustachian tube to the middle ear." The patient had had a purulent inflammation of the middle ear for many years, resulting in almost complete destruction of the membrane and polypoid granulations of the mucous membrane of the tympanum. After careful treatment the granulations disappeared, and "a cicatricial growth, starting from the periphery of the membrane and from about the malleus, formed a septum between the lower and anterior portion of the tympanic cavity and the outer ear." This membrane was thin and flaccid, and easily made to bulge outward by forcing air through the Eustachian tube. Some time afterwards the patient reappeared, speaking as if suffering from a bad "cold in the head;" that is, the m, n, and ng sounds were pronounced b, d, and g. There were no other symptoms of a cold, and he explained the peculiar pronunciation as the result of a voluntary effort to suppress the nasal sounds, because they were accompanied by a very disagreeable crackling and bursting sound in the ear. An examination of the ear while the patient produced the nasal sounds, showed that, with each sound, the flaccid membrane executed a corresponding movement. By pressing a probe against the membrane its excursions were partially controlled, and the unpleasant sensations correspondingly diminished. When a portion of the membrane was excised, its movements immediately ceased, and the nasal sounds were pronounced clearly and without annoyance.

Experiments with a manometer made afterwards upon this patient and upon a person with sound membrane, showed a movement in the column of fluid, when the nasal sounds were pronounced, exactly corresponding to the movement of the abnormal membrane.

"The movements of the membrane in the case described, and of the manometric column when the tube was placed in the ear, show a certain pressure in the naso-pharyngeal space, corresponding to each of the three nasal sounds, and an examination into the position of the lips, tongue, and palate in the production of m, n, and ng, shows a corresponding diminution of the capacity of the buccal cavity."

"In the present case the unpleasant sensation in the ear caused the patient to seek relief by substituting the media b, d, and g for the nasal tones, thus allowing the air to pass out through the mouth, and diminishing the pressure in the pharynx and Eustachian tube and ear."

Dr. CHARLES J. KIPP, of Newark, N. J., reports *A Case of Angioma Cavernosum of the Lobule of the Ear*. The patient, a man aged 50, in good health, referred the commencement of the disease to a frost-bite twelve years before. The tumour was about the size of a hazel-nut.

Dr. GEORGE STRAWBRIDGE, of Philadelphia, contributes an account of a *Congenital Malformation of the External Ear*, and of a *Fibro-cartilaginous Tumour of the Lobule*. The subject of the malformation was a boy, 18 years of age, "whose right external ear was represented by a fold of integument 22 mm. long and 16 mm. wide, in which could be felt a small portion of cartilage." In the centre of this fold there was a rudimentary external meatus ending in a cul-de-sac. The watch and tuning-fork could be heard in contact with this rudimentary ear. The patient in whom the fibro-cartilaginous tumour of the

lobule occurred was, as is usually the case, a negro woman, and the disease was referred to the irritation of the lobule by an ear-ring.

A Case of Multiple Abscess of the Auricle, resulting in partial destruction of the cartilage, developed from a middle and external otitis, and somewhat resembling an othematoma, is reported by Dr. O. D. POMEROY, of New York. The abscesses were thought to be the result of a perichondritis developed by an extension of inflammation along the meatus from the tympanum. The cartilage entirely disappeared from the region of the abscess, leaving only integument and connective tissue in its walls.

Dr. POMEROY also reports *A Case of Otitis Media Hemorrhagica*. The attack of otitis was acute, coming on with chill, fever, and violent pain. The membrane was excessively distended with blood, which flowed out freely when the membrane was punctured. The patient made an excellent recovery. There was no kidney or brain disease.

The Early Treatment of Ear Diseases is the subject of some remarks by Dr. ROOSA, of New York. He thinks that otologists have given an undue amount of attention to the more chronic and intractable diseases of the ear in proportion to that paid to acute and curable affections, and that "our mission is now to teach the profession and the public that *acute* cases of aural disease are peculiarly susceptible to treatment, and that our hope for the prevention of chronic diseases lies in the early treatment of the very earliest stages of affections of the ear."

Though this latter assertion may have something the appearance of an absurdly obvious truism, no one who is much occupied with the treatment of aural disease will feel that this simple lesson can be too often repeated or too strongly urged. Many able and conscientious practitioners who would be the last to allow a destructive inflammation of the eye to progress for months unopposed, except, perhaps, by a feeble protest of warm water, glycerine, or olive oil, to hopeless disorganization, still strangely adopt exactly that plan in the treatment of the acute aural diseases that come under their care. This is particularly the case when the affection of the ear occurs in the course of some general disease whose gravity obscures the importance of the complication.

Dr. ROOSA also contributes *A Case of Purulent Infection (pleuro-pneumonia) resulting from Suppuration in the Middle Ear*, and a report of *Experiments concerning the Effects of Quinia upon the Ear*. These experiments were three in number, and referred to the immediate effect of the drug upon the ear. The first has already been fully published by Dr. Hammond, who was himself the subject of the experiment, in the *Psychological and Medico-Legal Journal*, October, 1874. The other two confirmed the result of Dr. Hammond's experiment—that the effects of quinia upon the ear are due to congestion.

G. C. H.

ART. XXXII.—*A Manual of General Pathology*. For the use of Students and General Practitioners of Medicine. By ERNST WAGNER, M.D., Professor of General Pathology and Pathological Anatomy in the University of Leipzig. Translated from the Sixth German Edition by JOHN VAN DUYN, A.M., M.D., and E. C. SEGUIN, M.D. 8vo. pp. 728. New York: William Wood & Co., 1876.

THE first edition of this really great work appeared in Germany in 1862, and was the joint labour of Wagner and Uhle, though the latter's share was a

posthumous one, he having died before its appearance. A new edition became necessary every two or three years, owing to the rapid strides in pathology; and finally this sixth edition presents itself, augmented in almost every chapter, very voluminous, and a monument of pains-taking, careful observation, great patience, clear perception, and encyclopædic knowledge—a type of a class of scientific work which we look for almost in vain out of Germany. This is really the first time that a complete description of the state of general pathology, now current, has been presented to the English-speaking part of the profession. The views now held by progressive investigators in this branch of medical science are given in a marvellous mass of well-arranged and carefully digested facts, embracing all departments of pathology, and furnishing minute and detailed information on every subject pertaining to the morbid state and disease in all its protean forms. Wagner's systematic arrangement and skill in classification are admirable, particularly in elucidating the bearings of facts upon the processes of disease.

The work is divided into four parts, of which the third and fourth occupy by far the larger part of the volume.

Part first treats of general nosology, in which is considered the nature and extension of disease, its symptoms, diagnosis, prognosis, course, and termination in recovery or death. The definition of death will give an example of the occasional conciseness of Wagner's language. He defines it as “the suspension of tissue metamorphosis, and its characteristic symptom is the cessation of the functions.” The first part occupies thirty-six closely printed pages.

Part second treats of general etiology, subdivided into internal and external causes. Under the first are included inheritance, age, sex, constitution, habit, or temperament. The distinction between congenital and inherited diseases is well made. External causes include atmospheric influences, the soil, the climate, dwellings, clothing and bedding, food and drink, occupation, profession, and other social conditions; and parasites, subdivided into animal and vegetable. Wagner calls attention, among other facts in atmospheric influences, to the relation that the quantity of oxygen in the air, and the loss of perspirable material, bear to the rarefaction of the air. The phenomena of “taking cold,” with the modern explanation, are given in detail.

The relations of the underground-water and stratum-water to health and disease are fully considered; and also the soil's modification of atmospheric pressure; of the temperature, purity, dampness, and movements of the air, and its influence on the nature of food. The effects of clothing and bedding on the bodily heat and its radiation are discussed; and also the importance to health of a stratum of air inclosed between the skin and the clothing. The more the air of a tissue is displaced by water, the less it can keep us warm—hence the susceptibility to dampness and catching cold in wet clothing.

The subject of parasites, vegetable and animal, including all the varieties of coccus and bacterium, is considered very fully, particular attention being devoted to the subject of fungi as excitors of fermentation and putrefaction, and as causes of contagious and other diseases. This is, perhaps, the most important medical question of the present age, and one which is staring us in the face at every turn. Wagner here gives us a very elaborate account, condensed from the views of all the modern authorities, in which the description of the organization and development of the fungi is very complete. Under this head we have a brief, though interesting account of gangrene of the spleen. The closing pages of the second part are devoted to the discussion of contagiums and miasms, in which the subject of epidemics is reviewed with care in all its phases. Among the various theories of the infecting agent in contagious dis-

eases, Wagner regards the so-called parasitic theory as the most probable, yet admits that in certain especially contagious diseases, the vehicle of the contagium is known, for they can be propagated by inoculation. The various contagious diseases are briefly discussed with reference to the manner in which the contagium is carried and received, in what stage of the disease it is generated, its incubation and inoculation. This part also has twenty-two pages of matter on all the animal parasites, including the arthropoda.

Part third is the most extensive one in the book, covering nearly four hundred pages, and treats of general pathological anatomy and physiology. It is divided into three sections: 1st. Local Disturbances of the Circulation; 2d. Inflammation; 3d. General Disturbances of Nutrition; and each of these is subdivided into a number of smaller sections. Under the head of local disturbances of the circulation, we find anæmia, hyperæmia active and passive, thrombosis and embolism, hemorrhage and dropsy. In these sub-sections the normal physiology of the body, especially of the blood and lymph, the influence of nerve-distribution upon circulation and secretion, the nature and properties of the white blood-globules, and the manner of formation of fibrin, are all described with a fulness which leaves nothing to be desired, though often the style is very much involved. Though all this occupies a great deal of space, yet it cannot be dispensed with, if we wish to have a clear comprehension of the local disturbances in the circulation, and of the etiology and nature of inflammation. The subject of thrombus, in its causation, organization, destiny, and results, is very carefully discussed; but the mode of organization is still left open, as the views held concerning it are very much divided.

The section on embolism is particularly good in regard to the effects ascribed to emboli, gangrene, hemorrhage, or metastatic abscesses. The question of specific poison as a contagium again appears in these sections on thrombus and embolism.

Fifty pages are given to a consideration of Inflammation in the widest sense, beginning with a definition—to which, however, as to all other definitions of this subject, valid objections may be raised. The influence of the nerves upon the origin of inflammation is given somewhat briefly; but we have a very full discussion of the origin of pus-corpuscles, and their relation to the white blood-corpuscles. There is also a very complete and exhaustive abstract of the various theories of inflammation which have held or are still holding sway. As the subject of diphtheritic exudation is reached, the author again brings forward the question of septic poisoning and a specific contagium; and it also appears under the head of Gangrene. It is easy to see from the numberless references and abstracts how important a part this question of fungi, whatever they may be, plays in modern scientific medicine. Wagner makes three classifications of inflammations: 1st. An etiological division; 2d. A classification according to the preponderance of some one of their elementary phenomena, such as congestive, exudative, productive, or degenerative; and, 3d. A classification with respect to their character.

The third division of part third, or the general disturbances of nutrition, is subdivided into three sections: 1st. Imperfect nutrition or retrograde metamorphosis or atrophy; 2d. Gangrene; and, 3d. Progressive metamorphosis or hypertrophy, and tumours. Under the first of these heads we find classified the various degenerations, albuminous, fatty, pigmentary, calcareous, amyloid, and colloid, and a few words to mucous metamorphosis, as distinct from colloid, which is more correct than to regard it as a form of colloid degeneration, as too many pathologists are in the habit of doing.

In the sub-section of progressive metamorphosis, including tumours, we find.

a most admirable and full description of the new formation of pathological cells, with cell division and endogenous cell-formation, and the transformation of one tissue into another. The classification of new growths given by Wagner is histological mainly, but at the same time he does not disdain assistance from etiology and clinical observation. He presents fifteen varieties of new formation, according to the tissue involved, with a mass of information extending through one hundred and fifty pages, in which we are at a loss which to admire most, the wonderful faculty of sifting and arranging facts, or the great patience displayed in wading through the immense literature of the subject.

The different varieties of tumours are classified and described in accordance with Virchow's plan as given in his work on morbid growths. As a specimen of the kind of work to be expected all through the book, we would refer the reader to the article on the "New Formation of Osseous Tissue," including the regeneration of bone, and to the very full article on "Tubercle." The author still makes use of the term "cancer," which is perhaps scarcely to be avoided, but with limitations and discrimination. His definition of the term is an extensive one and somewhat complex, but both clinical and anatomical.

Part fourth treats of the pathology of the blood, subdivided into eighteen heads. These include anæmia, changes in the amount of the various constituents of the blood, solid and fluid, with leucocythæmia, jaundice, uræmia, diabetes, and the more rare varieties of dyscrasiæ, such as melanæmia, acetonæmia, and hydrothionæmia. The probable development of the red blood-globules is very clearly stated.

Considerable attention is bestowed upon the phenomena induced by suffocation. The section on pus-poisoning is subdivided into—1st, Septicæmia; 2d, Embolic pyæmia, in its restricted meaning; and 3d, Puerperal fever; and is a very lucid presentation of the recognized theory of pyæmia. The author believes, as do many pathologists at the present day, that septicæmia and pyæmia owe their origin to two different vegetable parasites; the first, to rod-bacteria; the second, to globular bacteria, which act either directly or by generating some noxious substance.

The section on fever is by Prof. Thomas, and is probably the most complete account of the subject which can be found in any work. It is subdivided into three sections, one on the symptoms of fever, one on the regulation of animal heat, and one is a sketch of the recent theories of fever. Under the first head we find considered normal and morbid temperatures, types of fever, a consideration of the pulse and respiration, and state of the urine. In the section on the regulation of animal heat, the author has given a very interesting account of the relation between metamorphosis and heat, and of the influence of the nervous system on the latter.

Finally, sections on marasmus and the hemorrhagic diathesis close the volume.

The work of the translators has been well done, though lacking in smoothness, and in many places containing long-involved sentences. Yet it should be remembered that the style of the original is one of the most intricate in all modern German medical literature, and the translators have done well in endeavouring to present the subject as concisely and clearly as possible. Their work is to be commended, but not more so than their patience in completing what must have been a laborious task. A double index of authors and subjects will be found a great aid in consulting the book.

We would most earnestly commend this work to all students and practitioners who are heartily desirous of perfecting themselves in a knowledge of pathology, as by far the most valuable work on the subject that has yet appeared. The

information furnished by the book is not solely the result of Prof. Wagner's own observation, but has been derived from a very large number of sources, as is shown by the very copious bibliography which heads each chapter, and the many references which appear all through the volume. C. S. B.

ART. XXXIII.—*An Introduction to Pathology and Morbid Anatomy.* By T. HENRY GREEN, M.D. Lond. Second American from the Third Revised and Enlarged English Edition. 8vo. pp. 316. Philadelphia: Henry C. Lea, 1876.

THIS second edition is considerably more than a reprint both in bulk and in increased value. When the first edition made its appearance five years ago, we had no satisfactory work on elementary pathology in the English language, and were therefore very glad to see this work of Dr. Green's; and in reading now this later edition, we see no reason to recall our former good opinion, but on the contrary, to reiterate and enforce it. The book has been very materially altered and enlarged, and a number of the illustrations in the first edition have been withdrawn, and much better ones substituted. The arrangement of the chapters has been altered, and, we think, for the better, and considerable augmentations made to most of them. The chapter on "Tissue Changes in Pyrexia" is new, and the description of the "Pathology of Pulmonary Emphysema" has been entirely remodelled. The presentation of the cell-doctrine, with the anatomy and physiology of cells, is clear and concise, and yet full enough for all purposes. Dr. Green is fully alive to every advance made in pathology, and gives us quite a full notice of Cohnheim's later observations on inflammation.

The chapters on fatty degeneration are very able, and much improved by the new light thrown on its pathology by the researches of Voit and Bauer. The distinction between "fatty metamorphosis" and "fatty infiltration" is very clearly stated, and particularly well exemplified in the account of fatty degeneration of the heart.

In the chapters on "Tumours or New Formations" we think Dr. Green errs in clinging to the word "cancer" as a histological definition, which in its divisions is confusing, in the present state of our knowledge of the subject. He seems inclined to admit the probability of the so-called "spermatic influence" of the primary tumour on the secondary tumour through the cells or minute particles transmitted from the primary tumour.

The chapter on inflammation is very clear and gives the latest views of Ryneck and Cohnheim in regard to the part played by the walls of the blood-vessels in the process.

The account of the general pathology of tubercle and of acute tuberculosis is very good, and abreast with the latest investigations.

Reverting again to the subject of inflammation, the part played by the leucocytes and the connective tissue corpuscles respectively in inflammation of connective tissue is most admirably explained in the light of the most recent investigations.

The author is perhaps wiser than his generation in not attempting to draw any dividing line between the histology of croup and that of diphtheria, but this, if an error, is certainly one on the right side.

The sections on croupous, catarrhal, and interstitial pneumonia are very

carefully written and clearly expressed. The author is inclined to agree with Buhl's statement, that in the catarrhal form of pneumonia, occurring as a sequel to capillary bronchitis in children, the nodules of pulmonary consolidation frequently consist almost entirely of bronchial secretion, and hence the term "pneumonia" is not strictly applicable. In regard to the etiology of interstitial pneumonia, Dr. Green doubts the correctness of the view entertained by many pathologists, that a fibroid change may occur in the lungs as a primary and independent affection, and that, consequently, this form of pneumonia occupies the same pathological position as the indurative processes in the liver and kidneys.

The chapter on pulmonary phthisis is perhaps the most carefully written and valuable in the book. Its pathology and etiology are particularly well condensed and clear, and yet not too short for a careful consideration of the subject. The whole chapter is a valuable epitome of the established views of later pathologists.

In the chapters devoted to the "Changes in the Blood and Circulation," the description of the organization and composition of a thrombus is especially good.

The book closes with a brief account of the more common methods of preparing and mounting specimens for microscopical examination.

In conclusion, we cordially recommend this work to students and the profession generally, as a specimen of hard work and careful observation in a field of which too little is still known.

C. S. B.

ART. XXXIV.—*Diseases of the Hip, Knee, and Ankle-Joints, and their Treatment by a New and Efficient Method.* By HUGH OWEN THOMAS: Pp. 101. Liverpool: T. Dobb & Co., 1875.

DURING the past few years we, on this side the Atlantic, have been almost forced to believe that, if anything good in the way of treating diseased joints was known, our own countrymen were not only the originators but the most successful exponents of the methods.

It is true that Bonnet has written much on this subject, and from him emanate most of the original ideas now in vogue; yet with his writings the busy practitioner is unfamiliar. Barwell and other Englishmen treat of joints and methods for relief, yet they have had no special splint that cured all arthropathies, and the treatment without splints, we are taught to believe, is antiquated.

The book now before us comes from Liverpool, and is in good shape for a library. The type, moreover, is large, the words often widely separated, and the chapters are profusely interspersed with large plates, making it altogether a very readable work. The author in his effort to make a book has wisely excluded all that does not bear directly on the special point he aims to bring before the profession. In a word, it is his splint which he has used for ten years, and now, for the first time, brings before the medical public.

The hip splint consists of a thick bar of malleable iron, extending from the lower angle of the scapula to the calf of the leg, first moulded to fit over the sound limb. A band of hoop iron, riveted to the upper extremity, grasps the lower portion of the thorax in four-fifths of its circumference, a second band at middle of thigh extends over half its circumference, while a third band at lower extremity half encircles the calf.

During the first three or four months the patient is confined to bed, and the splint is used continuously, being fastened to the limb and body by means of straps and bandages. This is called *the first stage* of treatment, and during this period he claims ability to bring the limb into normal position. He insists on the absolute dorsal decubitus while the splint is being modified or readjusted. Under no circumstance must the sitting posture ever be tolerated.

The second stage of treatment begins when the patient leaves the bed. Then an iron patten, two or three inches in height, is attached to the shoe of the sound limb, while crutches are used in locomotion. This stage continues until "the limb is well atrophied around the great trochanter."

In *the third stage* the splint is removed at night and replaced during the day, the crutch and the patten being still used "for a certain period."

In *the fourth stage* the splint is discarded altogether, while the crutch and the patten are still retained until the surgeon is satisfied of the permanence of the cure. "If the case does not progress to the surgeon's satisfaction, some of these stages must be prolonged."

Such is the apparatus, and the advantages claimed by the author are its cheapness and its ability to secure perfect *immobilization*, the principle which forms the basis of his whole treatment, and which, in his experience, effects a "resolution of all inflammation in nearly every case, and insures a perfect cure in most instances." He further claims that the prolonged arrest of a joint's movements, for even an unnecessarily long period, certainly never does harm, while motion of an inflamed joint promotes ankylosis. This is contrary to the accepted teaching on this subject, and of it the author seems aware, devoting considerable space to the proof of his statement. While his arguments are not conclusive, they are worthy of much attention, and direct one to a question of great scientific interest. A discussion in this connection is not in order, and those interested are referred to the work itself.

The knee splint consists of an ovoid ring well padded, and through this the limb is placed, while the perineum receives the weight of the body. To the ring are attached two upright bars, joined some two or three inches below the foot by a patten. Between the bars is stretched an apron of basil leather, perforated at two points opposite the knee for the insertion of a bandage. As in hip-joint disease, so in this, a patten is used on the shoe of the sound limb. For diseases of the ankle-joint the same instrument is used.

A review of the chapters seriatim will best bring out the merits and demerits of the treatment, and this shall be done as briefly as possible.

Chapter I. treats of hip-joint apparatus, and a plate accompanying gives Charriere's modification of Bonnet's "Grand Appareil," condemned on account of its cumbersomeness and high price; H. G. Davis' "Perineal and Side Splint, with Counter-Extension;" Sayre's modification of the Davis splint; Taylor's modification of the Sayre splint; Washburn's appliance designed for the poorer classes of patients, and identical in principle with Davis'; and Hutchinson's variation of Taylor's—all of which he condemns because they permit motion at the joint, although claiming to cure the disease by relieving pressure. Mr. Thomas claims to know from "practical experience" that a cure free from defect with these splints is impossible. He admits, however, on the following page, that on rational grounds he was opposed to Dr. Davis' splint, and did not venture to use it. In this country that is not what we call "experience."

On page 6 we find two remarkable paragraphs:—

"Since the visit of Dr. Sayre to England, and the exposition of his method to the London surgeons, I have seen several instances in which his apparatus

was skilfully applied, and, from personal knowledge, I am satisfied that in not one of these cases was the disease benefited or even corrected.

"The best commentary upon this method is the remarkable frequency with which its principal advocate has had to perform excision. Persistent use of his instrument tends to the conditions necessitating this operation."

As regards the first paragraph, his "personal knowledge" checks at once all comment. As regards the second, and especially the last sentence, his statement is purely gratuitous and unsustained by any proof. Such statements enable us to exclude him from the list of scientific Englishmen. Dr. Sayre claims that the majority of his excision cases have never been treated with his apparatus. The author should have been acquainted with histories of the reported cases.

On the same plate are given the splints of Drs. Andrews, Bauer, and Hamilton, the first of which he has tested in practice, and found the results unsatisfactory. The second, being a modification of the first, he has not tested, but condemns untried. Professor Hamilton's apparatus is dismissed as being "not of much value," owing to the upper and lower levers being too short. Of Mr. Barwell's splint he "made a persevering use," and with adults he had some success, with children little or none. Friction, he asserts, is a greater evil than pressure, and any contrivance which does not perfectly immobilize the joint is defective.

Chapter II. discusses superficially diseases of the hip-joint, and embodies a report of ten cases. The first few pages are given up to an exposition of "my new method of diagnosis." If this be the first time the author has made it known to the profession, he will fail to impress Americans, at least, with its novelty. The patient is placed in the dorsal decubitus on a hard table, the spinous processes made to touch, the sound thigh flexed on abdomen and held as a lever, while a failure to bring popliteal space of suspected limb to the table (in other words, to completely extend) is pathognomonic of hip disease. Any student who has attended Bellevue College during the past five or six years is familiar with "my new method." There is one point, however, which our author makes, and that of itself should admit him into the ancient order of clairvoyancy. He can tell how many weeks or months the disease has existed by the amount of flexion; for instance, an angle of *about* 160° enables him to say six weeks, 150° five months, 90° twelve months' duration. Now that is very remarkable. In one case reported, by applying "my diagnostic method," he concluded three months. The parents denied strenuously, but after a few days' consideration came around to his belief. One of our distinguished teachers once remarked, in speaking of a certain case on which he wished to lecture for another disease than the one the patient had, "that's the advantage in having it all our own way."

The reported cases give, on analysis: one received in first stage, duration and angle of flexion not specified, length of treatment twelve months, the first three of which required the horizontal position in bed, with an ultimate cure for the result; four in second stage, two of which were of five months' standing, indicated by an angle of flexion of 150° , the other two, three and four months' standing respectively, not indicated by any given angle of flexion; three were "cured," one "recovered," one kept in bed three months, one five months, one nine months, and one twelve months; five were received in the third stage, and in three relief was afforded, one recovered in three years' time, and one died twenty days after an excision.

Chapter III. is devoted to the knee-joint. Position and the weight of the limb are sufficient, he asserts, to remedy any deformity not the result of true

anhylosis. Twelve cases are introduced, one or two of which "as having been crucial tests of the efficacy of this method of cure." The duration of the disease varied from six months to thirteen years. Six gave flexion at an angle of 90° , two at 140° , one at 120° , and one at 160° . In every instance this flexion was overcome like magic, the shortest period in accomplishing which being ten days, the longest four months. In five, the recovery was perfect, and one of these had numerous sinuses and "kidney disease" as complications. Four recovered with stiffened limbs, while three were greatly relieved.

Chapter IV. is short, and is devoted to a brief consideration of disease of the ankle-joint. Success was great.

In Chapter V. occurs the discussion of anhylosis and its causes, to which reference has already been made.

The number of cases of joint disease treated by the author since the adoption of his new method is one thousand, an analysis of which would have greatly enhanced the value of the book. On the whole, the method thus advocated is worthy of trial, and, if relief can be given to that unfortunate class of sufferers, no stone should be left unturned. V. P. G.

ART. XXXV.—*The Pathology and Treatment of Childbed. A Treatise for Physicians and Students.* By Dr. F. WINCKEL, former Professor and Director of the Gynæcological Clinic at the University of Rostock. From the second German edition, with many additional notes by the author, translated by JAMES R. CHADWICK, M.D., Clinical Lecturer on Diseases of Women, Harvard University. 8vo. pp. 484. Philadelphia: Henry C. Lea, 1876.

FIVE years ago we published a review of this work, and entered at some length into an examination of its merits. At that time, there was no systematic treatise upon the subject in our language. That want has since been supplied by a very excellent work, and now comes this translation as a companion volume for the benefit of the student and as a counsellor to the practitioner.

Dr. Winckel's work is the standard manual upon diseases of the puerperal state in Germany, and in the review formerly published we fully recognized its great merits, and gave the views of its author upon the leading subject of this branch of medicine—puerperal fever.

Little, therefore, remains for us now to do except to welcome the appearance of the translation, unless it be perhaps to point out some of the peculiar features of the work.

In regard to the pathology of the febrile puerperal affections the author is a representative and exponent of the German school which recognizes the local affections as the point of origin of the general disease, and contagion as the chief if not only factor in the propagation of the latter. The key-note of the work may be found in this paragraph:—

"The idea that a general dyscrasia of the blood can be entertained as a remote cause of the more severe puerperal affections, must be abandoned in proportion as we gain a deeper conviction that purely local disturbances of nutrition lie at the foundation of all diseases. The truth of this statement is made evident by the fact that cases are becoming less and less common in which the autopsy reveals an entire absence of local organic affections, and also for the reason that in cases where blood-poisoning can be clearly proved, the source of infection is usually local, and may be traced to the genital organs."

In applying his principles to practice, he draws the lines rigidly, and leaves no standing place for puerperal fever as an essential fever:—

“When the very significant term *puerperal fever* is applied now-a-days to the most severe disease of childbed, the phlegmonous and diphtheritic affections of the genitals are thereby chiefly intended, from which a variety of the malady mentioned in the previous chapter is subsequently developed.

“The important fact should be borne constantly in mind, that the above named processes do not possess any specific character; nor are they by any means restricted to pregnant, parturient, or lying-in women.

“Finally, it is well known that the phlegmonous and phlebitic processes frequently occur in men also, and are throughout analogous to these puerperal affections. Between the latter, whether mild or severe in their character, and the diseases which so frequently supervene in case of wounds (septicæmia and pyæmia), no essential points of distinction can be made out.

“It has been established, almost beyond question, by the researches of modern times, that these affections invariably originate in the genital organs themselves, the constitutional disease being uniformly traceable to this locality as a starting point.”

In therapeutics he follows generally the “school” of his country, and especially in regard to the antagonistic use of cold for inflammatory affections. Thus, for instance, in the chapter on puerperal peritonitis, rejecting venesection entirely, and admitting that of late he resorts to local depletion very rarely, he strongly advises the local application of cold, a remedy to which the laity of this country, as well as the profession, are not yet accustomed, and which we think would be at present very difficult of application upon that account.

“If these agents fail to afford prompt relief . . . three or four ice-bags may be placed upon the abdomen over a thin linen sheet. These should be left in place, and constantly refilled by day and night (the ice must be renewed every 3–4 hours), until the temperature has fallen sensibly, and the patient complains of discomfort from the bags; the attempt may then be made to give them up; they must, however, be immediately replaced as soon as the temperature again rises considerably, or the pains recur. As to the use of ice-bags, which I have often employed with women in childbed for more than fourteen days consecutively, and always resort to immediately for all severe pain in the abdomen when ice is easy to be had, I can only corroborate the statements of Behier. I have never seen unfortunate results in my cases, such as diminution of the lochia and lacteal secretion, or affections of the skin, especially gangrene.”

Everything which emanates from any respectable authority upon the subject of puerperal convulsions—second only in importance to puerperal fever—will be examined with deep interest so long as the mysteries which surround its pathology remain unexplained. The author rejects the etiologic connection of the albumen in the urine with the eclampsia, as indeed we all must with the facts before us that it is often present without eclampsia occurring—that it is present in only 84 per cent. of those having eclampsia—that in 15 per cent. there is no albumen until after the convulsions have occurred. He also rejects the uræmic poisoning theory, both in its primary form of direct uræmia, and in its secondary phase, as adopted by Frerichs, in which the urea is transformed into carbonate of ammonia and becomes the active agent. He adopts, as far as our present knowledge will allow the adoption of any theory, that of Traube, Munk, and Rosenstein, which severs the connection of eclampsia with any renal disease, except in so far as albuminuria increases anæmia and a predisposition to convulsions, and finds the cause in a state of hydræmia producing œdema and anæmia of the brain. He admits, however, that “a thoroughly satisfactory explanation of many cases of eclampsia has not yet been found,” but thinks the one above stated well supported by clinical observation and experimental research.

Among the chapters worthy of especial note are those on sudden death during labor, on milk fever, so called, on affections of the pelvic ligaments, and on the eruptive diseases during the puerperal condition.

The work is characterized by plain and careful statement of facts, by the presentation of statistics, whenever statistics are of value, and the author's large experience with the numerous reports of cases give a clinical as well as a didactic character to it.

In the translation we should have liked to see some notes appended, some references, for instance, to the brilliant results attained by our own countrymen in the treatment of chronic inversion of the uterus. We think, also, that, for the convenience of readers, a table of the metrical system of weights and measures should appear on a fly-leaf of every volume in which this system is used in the text, so long as we are in the transition period between the two. The work of translation is exceedingly well done, the stiff and constrained style so often seen from an attempt to follow the author too closely verbally is entirely avoided—his views are faithfully presented in good English.

J. C. R.

ART. XXXVI.—*Sanitary and Medical Reports for 1873-74.* By Officers of the U. S. Navy. Prepared for publication, under the direction of the Surgeon-General of the Navy, by H. C. NELSON, M.D., Surgeon, U. S. Navy, Assistant to the Bureau of Medicine and Surgery. 8vo. pp. 818. Washington: Government Printing Office, 1875.

THIS volume is the first of a series to be issued by the Bureau of Medicine and Surgery of the Navy Department. Its chief aim, as stated by Surgeon-General Beale, will be the sanitary improvement of the navy, not neglecting, however, the advancement of medical science, and often including information upon the climatology, botany, natural history, ethnology, and diseases, of the places and people visited by our national ships.

The first half of the volume is occupied with reports from individual vessels by the medical officers attached. These describe and criticize, first, the ventilation, warming and lighting of the ship, with the character of the food, water, and clothing supplied. The medical and sanitary history of the cruise is then recorded, with some account of the climate and sanitary character of the ports visited. We will notice a few of the more important recommendations and more interesting facts.

The traditional flooding of all the decks with water every Saturday, and of some of them daily, is productive of discomfort and disease. Paint or shell-lac upon some decks, with a much more sparing use of water, is advised. Even washing one deck on a Friday, so that it may be a dry resort from the next day's deluge, is suggested. Nothing but orders from the Department, however, can procure much deviation from the set customs of the service.

The sick-bay, or hospital, in our ships is generally badly located. It is advised that in the larger vessels it be removed from the berth-deck to the gun-deck, where ventilation and light can be better procured, together with relief from several objectionable conditions. The after-part, also, of the gun-deck is thought to be better than the old location in the bows.

A light hat or cap for warm climates is an urgent need. The clothing generally is not altogether what it should be. The whole system of providing clothing and bedding is here criticized. As it is, the recruit enters service

with a debt upon him of \$70 or \$80 for his outfit. This is demoralizing, and tempts to desertion.

A larger bread-ration, especially on account of new recruits being unable to eat the meat provided, is urged by Inspector Gibon. The present ration is but 14 ounces, and by the customary stoppage or relinquishment of one in five, is reduced in practice to $11\frac{1}{2}$.

Bathing facilities for the men are wholly wanting. In certain climates and circumstances, their absence is very injurious.

Inspector Hood suggests that the Department issue a code of sanitary regulations, to be made binding upon commanding officers. At present medical advice is often unheeded, and sometimes resented.

The experience of naval surgeons as here recorded certainly strongly supports the sanitary value of the regulation of prostitution. In France, Portugal, and Italy, where inspection is regular and thorough, cases of specific disease among the men were very few and very mild. In the Chinese port of Hong Kong, where stringent rules are enforced, a two months' stay was not followed by a single case of syphilis among the ship's company. The record is very different when our ships have visited ports where prostitution was unregulated, as in Barcelona.

In Greenland pulmonary complaints were found to be very prevalent. The Esquimaux are thought to be rapidly dying out. Their unventilated and crowded huts reach a temperature of from 80° to 100° F. when the outer air is perhaps 20° to 40° below zero.

Phthisis was found to be extremely prevalent all along the west coast of South America. In Chili 35 per cent. of deaths in public hospitals are due to this cause. The ordinary death-rate of Valparaiso, 48 per 1000, was raised by a smallpox epidemic to 93! In the treatment of dysentery, here very common, ipecac in large doses is the favourite remedy with the people and the profession.

On the island of Juan Fernandez, Surgeon Spear reports of the wild goats, whose progenitors have been wild for three hundred years, that "their young seem to inherit perfectly the domestic traits of the goat." This he noticed in two young ones kept for some time aboard ship.

A child of eighteen months old, in a Mexican port, was found to be subject to what seemed to be regular paroxysms of hysteria.

Elephantiasis Arabum is so prevalent in Rio Janeiro that one-tenth of the inhabitants are estimated to be affected. The same disease was observed to be extremely frequent in China, and the islands to the south and east. Other forms of leprosy, attended with anæsthetic, tubercular, and discoloured patches, were also found to be very common in China. Some surgeons do not hesitate to assign for it a malarious origin. It is asserted that when ague disappears in a district, from improved drainage, the other malady follows. A history of repeated attacks of intermittent, each one in succession attended with increasing pain and swelling in one leg, is said by one writer to be uniformly connected with every case of elephantiasis.

Smallpox is said to be never absent along the Chinese coast, and to prevail at times as an epidemic. The same writer says that the practice of inoculation is "tenaciously adhered to throughout this part of China." Every fourth or fifth person met, is marked with the disease, and many of them are blind or deaf. In the spring it is common to meet in the streets persons with the pustules developed on their faces.

A wonderful stoicism is reported to be exhibited by Chinese patients under

the knife, and before operations. Surgical cases do well even in circumstances which would seem to be very unfavourable.

Chinese medical practice deals largely with cauteries, setons, and moxas, together with charms, necromancies, and extraordinary drugs. Treatment, we learn, "is usually decisive in its effects, and lingering illnesses and bed-ridden invalids are not so common here as among us." The Japanese, whose practice has been the same, are eagerly adopting European and American methods. The well-meant attempts of the native physicians to change their practice, are, however, characterized by more zeal than discretion. With little or no knowledge of anatomy and physiology, they are not adequate to the judicious employment of the instruments and medicines which they so eagerly take up. For the next generation, however, the prospect is better. Several large hospitals are flourishing under accomplished medical supervision, and having medical schools connected with them. Religious notions have hitherto prevented dissections; but there are signs of speedy change in this respect. The people are cleanly and fond of fresh air, and generally healthy.

Part second, or the latter half of this volume, is composed of miscellaneous essays. Several of these describe epidemics of yellow fever, as observed on particular ships. A mild, continued fever, with debility, was noted by one writer as a forerunner of the outbreak of the epidemic, in the same manner as diarrhœa prevails before cholera.

A disease is described which is believed to be confined to certain portions of Brazil. It is an organic stricture of the œsophagus, terminating fatally after some months. In some districts it is so common as to be the cause of general dread, while a few miles off it never occurs, and is scarcely heard of.

A curious story is told of accidental poisoning by mercury. During a storm of some days' duration, the heavy rolling of the S. S. Wachusett caused the spilling of a quantity of this metal upon the berth deck. Here it rolled to and fro, hither and thither, and was in part very finely divided, and oxidized. Being in the tropics, the men were mostly bare-footed. Eight cases of ptyalism occurred within forty-eight hours, and soon sixteen more were on the sick list, besides fifteen less severely affected. Some few of the patients, only, got the metal also in their food, through the upsetting of their "scouse" upon the deck. Pains in the back and limbs, and very severe supra-orbital pains were complained of by all the patients. No febrile nor intestinal symptoms appeared. The mouth trouble was in several cases extremely grave.

In an essay upon recruiting in the navy, the faults of the existing system, and the difficulties encountered by the medical examiner, are well exposed. The suggestion that veteran imposters be tattooed upon one shoulder, we fear is not a safe one. An eminent physician of Boston was mulcted in heavy damages for branding a deserter during our late civil war.

Naval Surgeon Pilcher gives an historical sketch of the prevalence of small-pox in the U. S. Navy. It seems pretty clearly established that revaccination has not been performed with that care and precaution necessary to success in the circumstances. At sea, indeed, or upon foreign stations, efficient virus cannot always be obtained or preserved. Of over four thousand sailors, presumptively vaccinated in youth, one-eighth were attacked, and one in eleven or twelve of these died, in the recorded prevalence of variola upon U. S. ships. No place is better adapted to the spread of the disease than the confined and crowded decks of a naval ship. This ratio, therefore, is believed to represent the greatest liability to the disease in persons once vaccinated.

Another paper, by Surgeon Woolverton, especially represents the need in our navy of a more uniform and careful system of vaccination.

Four papers deal with the ventilation of ships. Fans, either to exhaust or supply air, can be easily and effectively attached to the propeller shaft in steamships. Pipes leading from all parts of the vessel into the heated space between the smoke-stack and its jacket, are also suggested. The lower masts, when of iron, may have their interior utilized in a similar manner. When painted black above the decks, the sun's heat creates in these a powerful ascensive current. In a British ship thus constructed, charcoal stoves were placed in the bottoms of the masts. This seems to us an admirable plan. The need of fresh air is very great. The peculiar construction and surroundings of ships render it extremely difficult to change the atmosphere of all parts. The odours upon a berth-deck in the morning are reported to be nauseous and oppressive in the extreme. Tests for carbonic acid, too, here given, indicate a most unwholesome foulness.

Trials of jaborandi, made by Dr. F. V. Greene, showed the drug to possess great power as a sialagogue and sudorific.

Caña Agria is a South American plant recently reputed to cure diabetes.

Several interesting pathological cases with autopsies are reported. Hypodermic use of sulphate of atropia is recommended in epilepsy.

Dr. Kidder contributes a somewhat full account of his experience with venereal disease in a hospital ship stationed at Nagasaki, Japan. He believes that gonorrhœa is too little cared for by naval surgeons. The more general enforcement of rest and low diet in the early stages, and a continued surveillance until recovery, would be better for the sailor, the service, and the health of the ports visited.

The same gentleman contributes a summary report upon the natural history of Kerguelen Island. But one mammal inhabits the island—a kind of mouse, believed to be descended from ancestors brought thither by whalers. Twenty-one species of birds, and a full collection of botanical specimens, were collected and consigned to the Smithsonian Institution.

This volume, unlike the one upon cholera from the same printing office, is handsomely printed upon good paper. There are, however, many typographical errors; and two whole sheets of sixteen pages each are wanting entirely, in the copy before us. We welcome this publication, as likely to result in benefit to the sailor, to the navy, and to the profession both afloat and ashore.

B. L. R.

ART. XXXVII.—*Specimen Fasciculus of a Catalogue of the National Medical Library, under the direction of the Surgeon-General, United States Army, at Washington, D. C.* Imperial 8vo. pp. viii., 72. Washington: Government Printing Office, 1876.

IN the number of this Journal for April, 1874 (p. 482), we had occasion to notice the appearance of a catalogue of the magnificent collection of books then known as the "Library of the Surgeon-General's Office," but now more appropriately designated as the "National Medical Library." That catalogue, though forming three large volumes, embracing in all over 2400 pages, contained only the names of authors represented in the library, with a list of anonymous works, journals, transactions of societies, etc., and was (if we may be allowed the expression) a mere bibliographical baby in comparison with the elaborate work of which a specimen is now issued. This work, as we learn from Dr. Billings's introductory letter, will, when completed, form no less than *five* volumes of

about one thousand pages each; and it will, we do not hesitate to say, if carried out as thoroughly and as carefully as it has been begun, constitute without exception the most valuable contribution to medical bibliography which has ever been made in any part of the world.

We are very glad to find that Dr. Billings has decided the question between the double and single-alphabet systems in favour of the latter; or, in other words, that he has so arranged his work that the student, having a reference to either the subject of a book, or its author's name, will not fail to find it without the trouble of hunting through different parts of the catalogue in his search. To illustrate the great convenience of the single-alphabet system we select from a single page (p. 71) six headings, to wit, *Ah' Mad*, *Ahmedabad*, *Ahmed-Nadim*, *Aibling*, *Aiken*, and *Aikin*; three of these are names of subjects, and three names of authors; but how many readers, if authors and subjects were catalogued in separate volumes, would know in which to look for each? The multiple-alphabet system is a favourite with the German writers, some of whom carry it to an extent which is almost ludicrous; thus the indexes to the famous edition of Cicero, published by C. G. Schutz, are no less than six in number, and occupy by themselves as many as seven volumes. The present writer speaks with some interest on this subject, as having had personal experience with both methods; and on the *experto crede* principle he most heartily endorses the plan chosen by Dr. Billings.

In classifying the subject titles, an anatomical arrangement has been as far as possible adopted by Dr. Billings, while numerous cross-references serve to facilitate the search for any particular subject without undue repetition; by the use of a variety of types, too, the catalogue is rendered more available for consultation than could be done in any other way.

As one of the most prominent features of the library is its very extensive collection of journals and other periodical publications, so a most important feature of the catalogue is its journal bibliography, which, under the proper headings, furnishes accurate references to the original memoirs and cases published in all the more important journals both of our own and of other countries. The amount of patient and persevering labour represented by this portion of Dr. Billings's work can hardly be appreciated; but that it has been a labour of love, it could never, we venture to say, have been accomplished.

We shall look forward with much anxiety for the completion of this catalogue, which, with Drs. Otis and Woodward's Medical and Surgical History of the War, will form a monument of civilization strangely begotten of the horrors of the battle-field, and will ever furnish future ages with a riddle deep as Samson's.

J. A., JR.

ART. XXXVIII.—*Recherches Physiologiques et Cliniques sur les Accouchements*. Par le Dr. P. BUDIN, Ancien Interne des Hôpitéau et de la Maternité, Membre de la Société Anatomique, etc. 8vo. pp. 36. Paris: Bureau du Progrès Médical, 1876.

WE have presented in this pamphlet four obstetrical papers. The first is upon the long questioned point, of the existence of relaxation in the pelvic ligaments prior to and during parturition, and the author claims to present a new means of determining the existence of motion in the symphysis pubis, that will be best understood by reference to a case reported in full, which we reproduce in a condensed form, as follows:—

At the close of March, 1875, Adeline L., far advanced in pregnancy, was admitted into the Maternité Hospital, having fallen and bruised herself on the hip in consequence of great difficulty in walking. When extended in bed she experienced no pain, but did so upon motion, especially under pressure over the pubic and sacro-iliac symphyses. She could only walk by supporting herself with her hands upon convenient objects, as a chair, bed, etc. She had a painful oscillating gait, and could not stand erect on one leg without falling in the attempt. In the recumbent position, by moving the lower extremities so as to bear alternately upward upon the innominata, a motion could be felt at the top of the symphysis pubis, indicating a change in the line of the pubic bones. Another expedient was devised and tested, as follows: The woman was made to walk, whilst the physician held his finger in her vagina with its tactile portion resting on the arch of the pubes, when the ascent and descent of the pubic bones alternately, could be readily distinguished in the sensation and motion imparted to the finger. On the first of April the woman was delivered, and ten days afterward could walk quite readily. There was still a perceptible motion at the pubes, but much less than when first examined.

Pursuing this plan of observation in more than 80 cases, Dr. Budin presents to us the following opinions, viz. :—

“With all pregnant women, there exists a certain degree of mobility in the symphysis pubis during the last months of pregnancy.

“This mobility increases as the termination of pregnancy approaches.

“It is more marked as a general rule in women who have had children, although the rule is not absolute. Slightly extended in primiparæ, it is much more so in women pregnant for the third, fifth, sixth, or eighth time. In the last case it is sometimes truly extraordinary, and it is astonishing to see women walk with so much facility, who present such a degree of motion at the top of the symphysis pubis.

“In contractions of the pelvis, we have not found, contrary to the opinion of Giraud and Auseaux, that the movements were more marked than in ordinary cases.” (page 3.)

The author also remarks that there is no motion in women that have never had children; and that with multiparæ there is a minimum degree of mobility for a certain time after delivery. In a young girl of 17, suspected to be pregnant, but affected with ovarian dropsy; and another of 14, having a solid ovarian tumour, the vaginal examination during walking gave no sense of movement at the pubes. In a woman also of 45, with enormous fibrous tumours of the uterus, there was likewise no motion.

This mobile condition, if satisfactorily established, would appear indissolubly connected with advanced pregnancy, and might therefore become of value in some cases, to determine the existence of a fœtus in utero when the diagnosis is rendered obscure by a complication with morbid abdominal growths.

The second essay is entitled “*At what moment should we tie the umbilical cord?*” and embodies a number of experiments made at the suggestion of M. Tarnier at the Maternité Hospital. In 30 cases the fœtal cord was tied immediately after birth, and in 32, the time varied from a minute and a half to twelve minutes. In the latter, the cord pulsated for various periods up to ten minutes. In all cases the blood that escaped from the placental end of the cord was collected and measured; and after the placenta was delivered, the blood that would escape was allowed to drip out, and was also computed. The tables produced show a marked difference between immediate and delayed section in the amount of blood retained in the placenta. Under immediate section, the average escape directly after the separation averaged 98.4 c. c. against 11.2 c. c. in the latter, an average loss of circulation to the new-born fœtus of 87.2 c. c.,

which might be prevented by a few minutes' delay. This amount is computed by Dr. Budin to nearly equal a third of the blood contained in the vessels of a matured fœtus.

A third, or intermediate series of experiments tried in 13 cases shows a much diminished loss, but still nearly quadruple that obtained under ligation after entire cessation of pulsation in the cord. In these cases the infant was allowed to breathe two or three minutes before the ligature was applied, after which the pulsations continued from $1\frac{1}{2}$ to seven minutes.

Upon these results Dr. Budin recommends the following rule of procedure: "*Ligation and section of the umbilical cord should not be practised until after its pulsations shall have ceased for one or two minutes.*" He also contends that the placenta is much more readily extruded under these circumstances than when it is turgid with the retained blood. In cases of *asphyxia* he advises not to bleed by the cord as a remedial measure, but to retain the placental connection until respiration is fully established and the pulsation of the funis has ceased; in which event there will be a loss of blood from the vessels of the fœtus, under the heart's impulse, to be returned from the placenta when the pulmonary respiration and circulation have become fully established.

The other articles in the pamphlet are mainly pathological. The *third* is a report of a case of infarctus of the kidneys, found in an infant that died whilst being delivered by the forceps. Each kidney was the seat of lithic obstruction in about one half of the pyramids. In the summit of each pyramid could readily be found a triangular deposit with the apex toward the extremity; and under pressure, between the fingers, a turbid fluid containing yellow pulverulent matter escaped. As this pathological change has been considered of value in a medico-legal sense, as evidence that the fœtus had lived, it is of great importance to know that it is not a perfectly reliable test, as has been thought by Virchow, according to whom this fœtus should have lived at least two days.

The *fourth paper* records the case of a pregnant woman who died at nearly full term of violent hæmoptysis. The Cæsarean operation removed a fœtus which after a long trial bid fair to survive, but died of trismus next day. The woman was found to have two vaginæ and two complete uteri united from the vulva to the fundus; with one Fallopian tube and ovary to each uterus. The unimpregnated organ had become considerably hypertrophied from the effect of its intimate connection with its fellow.

R. P. H.

ART. XXXIX.—*De la Tête du Fœtus, au point de vue de l'obstétrique; Recherches cliniques et expérimentales; Par le Dr. P. BUDIN. Imp. 8vo. pp. 149. Pl. xxxvii. Paris: Bureau de Progrès Médical, 1876.*

THIS is the second monograph of Dr. Budin we have been called upon to notice in this number, and, as he is an active worker in obstetrical investigations, we will, no doubt, hear of him occasionally in the future. This volume is mainly taken up with a careful examination of the conformation of the fœtal head, to determine its normal or average size, by various measurements; and the changes in these diameters, effected in the passage of the fœtus through the pelvis of the mother. He obtains his *normal head* by an examination of a living fœtus delivered after death of the mother, by the Cæsarean operation; and the *average*, by comparing this with a number, delivered by the head and breech, measured after recovery from the alterations produced by pressure in

parturition. Numerous diagrams and cases are given, which should be examined to be well understood.

We have had several obstetrical observers at different times engaged in the same work among us, and the measurements of what are considered to be average heads have been pretty well agreed upon. The subject is one of importance in the general question of the mechanism of labour; the remedying of defective positions; and the relative ease of delivery by the feet and head: but the main question of relation of head and pelvis must after all be settled in each individual case. The same woman may require the operation of craniotomy in one case, to remove an impacted head, and within a year deliver herself of a living child without having a physician present, by a rapid and easy labour. We frequently find large plethoric women who were in early life small and spare, in whom the skeleton is small, and pelvis rather below the average, although properly proportioned. Such women, being in robust health, not infrequently breed large children, and have great difficulty in parturition. One such case we remember, who has a large family, all of whom required the forceps for delivery. Another lost several of her large-headed children, and had little or no difficulty with the remainder, particularly the females. Where the father is large and overgrown, and the mother under size, we may also have difficulty from excessive foetal growth in some instances, as is not uncommon in the lower animals. But there is no rule upon this point, children taking their development from either side, being dwarfish or gigantic as the case may be. The main difficulty in parturition with large heads is not so much that the mother's pelvis is too small, as that its diameters are out of proportion, and not in correspondence with those of the head. A few minutes' work with the instruments will remove many an impacted head that only requires a little compression, and a little more force than the uterus is capable of exerting, where the pelvis is of normal configuration but a little under size. In one woman of this type, who had always been delivered by the forceps, we were called upon to assist in the birth of twins. The first came by the breech, was a female, and weighed eight pounds; there was some difficulty in delivering the after-coming head, but the hands sufficed. The second was a boy of nine pounds, and required the forceps for a few minutes, after some delay in the hope that the active labour might enable the mother to deliver herself. The uterine force in these robust women is often very great, although ineffectual, much more so apparently than in some delicate subjects who have rapid and easy deliveries upon all occasions, never having large-headed children.

We commend the work of Dr. Budin to those interested in the minute study of obstetrical science; and his *cephalometre* to any who may desire to investigate for themselves.

R. P. H.

ART. XL.—*Mortuary Experience of the Mutual Life Insurance Company of New York. From 1843 to 1874. 4to. New York, 1875.*

If the utmost luxury of binding, paper, type, and gilt edges can render mortuary statistics attractive, then this work must surely be so. From its heavy covers of brown morocco, to its tables of large, clear figures, and its richly coloured diagrams, everything is costly and in excellent taste.

The work consists of two distinct parts. In the first, which has a sub-heading of "Medical Statistics," the deaths which have occurred among the insured are examined, analyzed, and tabulated, from the point of view of the physician.

In the second part, or "Actuarial Statistics," the facts are presented as seen from the standpoint of the life insurance expert. Drs. G. S. Winston and E. J. Marsh were compilers of the first, and Actuary Wm. H. C. Bartlett, LL.D., of the second part.

Up to the end of 1873, 101,967 lives have been assured, while 5385 assured persons have died. The cause of death, arranged in nearly exact conformity to Dr. Farr's classification, is given for these decedents, in groups of one thousand in the order of time. In other words, glancing down one perpendicular column you note the death-causes of the first thousand persons dying assured; and in the next column to the right you find the same information for the second thousand, etc. Figures at the top show the period of time occupied in dying by each group. Owing to the growth of the business, as well as to natural causes, the time-periods have greatly diminished for successive thousands. The first was nineteen or twenty years, or 1843-62; and next four in succession are stated as follows: 1862-68, 1868-70, 1870-71, and 1871-73. (These figures we believe are not precisely as they should be; we think the last year of each group should be *one* smaller—and the word "inclusive" be understood.) By this happy thought in arranging the deaths, separate columns of percentages are not needed.

The larger mortality from diarrhœa and dysentery in the first and second groups—1843-1867—are thought to be attributable to the hardships and exposures of early California life, and of our civil war. Typhoid fever seemed decidedly to increase, from the first period to the second and third; and has at least retained its prominence since. Apoplexy shows a decided increase in the fifth group; but not a progressive one. And on adding together the deaths against the seven leading titles of brain-disease, we find little progressive increase, though there appears a moderate excess in the fourth group, which does not wholly disappear in the fifth. Cancer, with a mortality of 7 in the first thousand, has 27 in the last—a result we fancy rather of accident, or the small number of observations, than of greater prevalence of the malady. Indeed the compilers warn their readers against basing inferences on the small numbers which indicate the mortality from many diseases, and which vary greatly without apparent cause or method.

Consumption has caused 17.61 per cent. of the total mortality, as reported; but is believed to have been in fact accountable for some 20 per cent. This is one-third or one-half less than the general mortality from this disease among people of the age assured. Pneumonia, for some unknown reason, appears to have greatly increased, as a cause of death.

By records continued through many years, similar to these just described, and others presently to be mentioned, the company hopes to learn at what ages certain diseases are to be anticipated, in different parts of the country; what differences in longevity and disease-liability obtain between natives and the foreign-born; how long the medical examination of applicants affects their mortality—and to solve many other similar problems. In order to effect these purposes, we find tables showing age at death, nativity, residence at time of death, and year of insurance in which life ends. Three admirably devised tables exhibit the age of decedents—by separate diseases in each exact year of life, by groups of diseases in decennial periods of life, and again by diseases still further condensed into groups, in connection with the decennial periods. The two latter tables have, in red ink, the percentages of deaths by each malady in each life-period. The ten-years tables are extremely interesting and instructive. Beautiful chromo-lithographs exhibit at a glance the relative prominence of different death causes in six successive periods. The difference in *compara-*

tive fatality of typhoid and consumption in one direction, and of heart disease and urinary troubles in the other, is here very strikingly shown. The reader is reminded, however, that old people die much faster than the middle-aged; and that a *relative* diminution of deaths, say by consumption, does not necessarily mean that age confers partial immunity from that disease.

We next have three tables classifying the deaths as to nativity—first in detail, as to causes and places, and second and third with condensation of diseases into groups, and birth-places into larger divisions. Percentages are noted in the latter tables. As a rule, nativity seems to have influenced mortality but very slightly. As exceptions, natives show an excess of mortality from typhoid and malarial fevers, diarrhoea, cholera, and pneumonia. Britons, Hibernians, and Germans, lead the list of deaths from alcoholism. In deaths by apoplexy, the Scotch and the Germans largely exceed natives; but we believe the excess to be due to the small number of cases.

A group of tables, similar to the last, shows the cause of death in connection with residence at time of death. No important inferences can, as yet, be drawn from these tables.

The next triad of tables shows the causes of death, in detail and consolidated, in relation to the year or years during which the decedents have been insured. While the greater portion of deaths during the first year of insurance was from diseases which could not be foreseen by medical examiners, yet there are some which seem to indicate want of skill or care in examination, or concealment or misrepresentation on the part of the assured. Deaths by consumption in the first year amount to one-half its average percentage. By apoplexy, the mortality of that year is even greater than its average. Does this mean that, on feeling certain alarming warnings, men hurry to the office and procure insurance, without mentioning the vertigo, or rush of blood, or transient numbness? Cancer and alcoholism present the same state of facts; but the numbers are, perhaps, too small to warrant inferences.

Much further information in possession of the company still remains to be digested. We are promised, at some future time, tabulated facts as to occupations, physical condition and conformation, previous disease, hereditary tendencies to disease or to longevity, and several other important circumstances.

Concerning the second, or Actuarial division of this work, we shall speak briefly. Profound research, and the highest order of mathematical and philosophical talent, are brought into use in the discovery and application of the principles of life insurance. Even the explanations and deductions of Dr. Bartlett are in some cases scarcely comprehensible except to an expert.

We may mention, however, the fact that the mortality, during thirty year's experience, has fallen 20 or 24 per cent. short of the amount to be expected, according to the life-tables on which the premiums were based. A curious and almost solitary exception to this rule occurs in regard to the first year of insurance. For it is found that the proportion of persons dying in the first year of their insurance is a trifle larger than was anticipated from the standard tables. More careful selection of risks than is made in England, is Dr. Bartlett's explanation of the smaller death-rate among the assured of the New York company. The seemingly contradictory tendency of the first year's facts, he explains by saying that comparatively greater or less care in selection would scarcely show in the mortality so soon, and that the first year's deaths must always be in larger proportion due to acute illness, accident, and such causes as no caution in selection could prevent.

From causes which will at once suggest themselves, careful selection has much less protective power, both as to amount and duration, in the very young

than in persons fully grown. In persons insuring at the more common ages, the influence of selection must of course diminish from year to year, but probably never wholly disappears.

This portion of the work, like the former, has several elegant coloured diagrams. B. L. R.

ART. XLI.—*A Treatise on Surgery, its Principles and Practice.* By T. HOLMES, M.A. Cantab., Surgeon to St. George's Hospital. pp. xii., 960. Philadelphia: Henry C. Lea, 1876.

As indicated in the preface, this book "is intended to be to some extent an introduction to the more elaborate System of Surgery," of which Mr. Holmes is the editor. It is, therefore, mainly a *résumé* of these excellent monographs from which the author frequently quotes, while, however, he has not servilely followed them. The aim of the author, "to give a plain and practical account of each surgical disease and injury, and of the treatment which is most commonly advisable," has in the main been well accomplished. The student, and the practical surgeon, will find it in general a clear, concise, and practical guide which can be safely trusted, but no subject is treated as fully as would be desired by one who wishes an exhaustive study of any subject. But every such text-book is of value, for it makes a progressive step in some one direction which is sure to be appropriated in all subsequent books. The enormous improvement to be seen on contrasting our present school-books with those of twenty or thirty years ago has not been made by great and sudden leaps, but each book has gained a little on its predecessor in some one point, and the improvement is never lost. Were it only on account of the introduction of several instructive thermographs, this book would deserve especial commendation, for while the thermometer has rendered such excellent service in medicine, it has been too little appreciated by surgeons. American surgeons will also be glad to see that the comparative safety of ether as an anæsthetic is clearly recognized.

"The question of the relative safety of ether and chloroform is being just now anxiously debated. I have no wish to dogmatize on the subject, but I have used ether with great comfort for many years, and have never seen any but the most trivial inconveniences from it. . . . During the same time, I have also employed chloroform perhaps as commonly, and have been so fortunate as to escape any fatal accident from this in my own practice, and, as I have said above, never to see more than one death from it. But I think we can hardly resist the unanimous opinion of the American surgeons, founded on nearly thirty years of extensive experience as to the relative safety of ether, and if so we should only employ chloroform in exceptional cases." (p. 908.)

The most recent operations and apparatuses are generally noticed. Smith's mouth-gag for bloody operations on the mouth, the extirpation of the larynx for cancer (though Billroth is not named in this connection), Lewis's use of horse-hair in aneurism, Esmarch's bandage, etc., are incorporated in the work, and good common sense in general marks the judgment that is passed upon them. As an illustration of this good sense, let us quote the following on varicocele:—

"Sir A. Cooper said, with much truth: 'Varicocele should scarcely receive the title of a disease, for it produces in the greater number of cases no pain, no inconvenience, and no diminution of the virile powers.' . . . The number of cases of varicocele which require serious treatment are very few indeed, and any surgeon who operates frequently for varicocele must operate on many

cases which he would have done better to let alone. I do not deny that such operations may be sometimes required under circumstances which I will immediately point out; but the great majority require nothing but a bag truss." (pp. 839-40.)

The operation of Mr. H. Lee (compression between two needles and subcutaneous division of the veins) which he commends, we do not believe to be so simple and so innocuous as the procedure we have always followed of simply passing a loop of silver wire around the veins, twisting it subcutaneously, cutting it off short and allowing it to remain in the scrotum. There is no hemorrhage, the inflammation is slight, and no ill-results follow the retention of the wire.

The theoretical part of the work in general is good, though too little attention is given to pathological anatomy—the basis of all our rational modes of treatment. The doctrine of inflammation as viewed by the modern school of pathologists is unhesitatingly adopted in a very short statement of the main facts on which it is based. He admits the "Sarcomatous Tumours" as an intermediate class between the "innocent" and the "carcinomatous," although he regards this classification as neither good nor likely to be permanent, "but, as it has lately come much into vogue, it seems better for the present to adhere to it." The whole chapter on tumours (pp. 346-376), while it deals very briefly—indeed too briefly—with their pathology, is an excellent practical compend of their clinical characters and treatment. This practical characteristic is seen again in his judgment on Lister's "Antiseptic method." While careful not to commit himself to the germ theory on which it is based, he yet favours the method for the results achieved by it.

Some parts of the work seem decidedly disproportionate in elaboration and importance. Thus, in the chapter on ulcers, twenty different kinds are enumerated in seven pages, while the consideration of the general subject of dislocations is most unsatisfactorily discussed in less than two pages, and the treatment of fracture of the neck of the femur is disposed of in a half page. He is a strong advocate of the, to us, rather antiquated Desault's or Lister's long splint in fractures of the femur, though he alludes to the anterior wire splint and to Buck's apparatus. In the latter, both in the text and the illustration, the counter extension he recommends is by means of a perineal band; this is very rarely needed, if the foot of the bed be raised a few inches. The mechanical conveniences attained by this procedure render it very important.

A number of omissions of some importance should be pointed out, although in a work including the whole field of surgery they are not to be wondered at. Thus, under hemorrhage no allusion is made to Spiers' valuable needle. Sir James Y. Simpson is not named, either in connection with chloroform (the index reference to which is wrong), or with acupressure, nor is the aspirator spoken of in paracentesis pericardii. We were also somewhat surprised to see no allusion to Dr. Marion Sims, in the article on Vaginal Fistulæ, nor to Dr. S. Weir Mitchell, either in the chapter on Snake-bites or Nerve-wounds, while, excepting a foot-note of two lines and a half on page 345, the whole results of our late war as embodied in the unrivalled volumes and circulars of the Surgeon General's office, are entirely ignored. Some of the illustrations, especially of pathological specimens, are obscure as drawings, and only moderately good as engravings.

W. W. K.

ART. XLII.—*On Poisons in Relation to Medical Jurisprudence and Medicine.*

By ALFRED SWAYNE TAYLOR, M.D., F.R.S. Third American from the third and thoroughly revised English edition. With 104 illustrations. 8vo. pp. 788. Philadelphia: Henry C. Lea, 1875.

SIXTEEN years having elapsed since the appearance of this work, a thorough revision was necessary, and in many instances this has involved remodelling and rewriting as well as the introduction of new matter which has risen into importance during this time. General observations in relation to absorption by external application, hypodermic injection, and the elimination of poisons, of valuable application, are to be found in the preliminary chapters. Here also, the process of dialysis of the late Professor Graham is clearly described as affording the means of separating soluble crystalloids from substances of a non-crystalline character. The use of this method is not insisted on except for preliminary testing, on the ground that it is impossible to separate the whole of the poison, and that it frequently occurs that a small quantity of organic matter passes through the membrane at the same time as the poison. In the examination for strychnia only, does he present this process as available, referring to its successful use by Dr. St. Clair Gray, of Glasgow. A higher opinion of this method had been impressed on the writer by a few experiments on its use, parchment paper being employed, and that in the majority of cases in which time was allowed, it should be used as a valuable preliminary step, when, if successful, it may give indications of much importance, especially where the poison may be in small amount. It, moreover, when properly performed, should not introduce any more material into matter under examination. Spectrum analysis is also noticed, but "even this delicate method of research has failed to throw any satisfactory light on the changes produced by poisons" in the blood.

The subject of antagonism of poisons is noticed, and it is stated, that, although some of the powerful remedies given in poisonous amounts appear to be antagonistic, there is absence of proof that they mutually act in the blood without being attended with danger to the patient, Dr. Fraser having shown, that, though this antagonism may be exerted within certain limits, beyond this death may be caused by the combined action of both substances. In the classification of poisons, a new subdivision of Neurotics, "cerebro-cardiac," has been introduced. In the detection of poison, much stress is laid on the examination of the urine as furnishing a clear proof that it has been taken and passed into the blood, and in cases of simulated poisoning, or imputed attempts of this kind, it gives the necessary discriminating proof whether the poison found in the matters said to be ejected may have been administered, or subsequently introduced. Few persons would be willing to take the risk necessarily incurred by swallowing the poison for the purpose of sustaining the impression they desire to produce. The case of General Ketchum is here cited as one in which this proceeding would have spared much of the conflict of opinion which characterized that case.

The very responsible position in which the physician may be placed when called to cases in which the symptoms may indicate either disease or the effect of poison should call attention to this point, in which many valuable remarks and criticisms on cases which have attracted much attention will be found. The clear and decided opinion on this and many other points of practical bearing, up to the time in which the material for chemical research is placed in the hands of the expert for examination, deserve the study of every practitioner,

lest by his acts the guilty may escape or the innocent suffer. The neglect of many of the plainest requisites in these points are frequently brought to the notice of those who are engaged in the final examination, generally arising from inexperience or the want of thought or knowledge, as to the precision and accuracy required both in their own operations and the prevention of the interference of others.

On the subject of the individual poisons the changes are too numerous to be noticed in detail. They consist principally in the omission of matter or cases of inferior value, and the substitution of others of greater significance. Thus new and more simple methods of research, tests new or hitherto little used, observations on the relative value of their results will be found scattered throughout, so as to bring the subject up to the increased knowledge and experience of the present day. New remedies, and others which though previously known had not become common, are introduced, and receive the share of attention their importance demands. Of these a few may be enumerated, as carbolic acid, the aniline colours, absinthe, chloroform, chlorodyne, chloral, etc. In this edition illustrations of the crystalline form of those of marked character are introduced. These are microscopic in character, and exhibit the great additional aid that may be obtained by this mode of investigation, especially in experienced hands. The researches of Guy and Wormley are duly noticed.

Owing to judicious pruning, the bulk of this edition is not materially increased, and the additional number of pages does not adequately represent the increased value of the work, a satisfactory estimate of which can only be obtained by actual comparison throughout with those previously issued. In typography and execution it resembles the second edition in all respects.

R. B.

ART. XLIII.—*Diseases of the Nose and its accessory Cavities.* By W. SPENCER WATSON, F.R.C.S. Eng., B.M. Lond., etc. etc. 8vo. pp. 472. London: H. K. Lewis, 1875.

THE object of the author of this volume, as stated in the preface, was to supply the want of a treatise in the English language on the various diseases of the nose. The most extended account of these diseases was hitherto contained in Holmes's *System of Surgery*. Our author's effort has been to collect from various sources, in our own and in foreign languages, all of importance on these subjects, and to present his gleanings, duly arranged and classified, with the addition of his own original contributions.

While we are surprised at the extent of his researches in some directions, there are others in which we think he might have pursued them still farther with advantage. Our American contributions to the surgery of this department have, in many instances, received their due meed of praise, and our author has evidently kept *au courant* with much of our periodical literature; but some of our most important records on this subject have apparently escaped his notice. The field is rendered quite extensive by the addition of the "accessory cavities," and yet we question whether, in these very particulars, the work is any special addition to our stock of knowledge. The diseases of the Antrum of Highmore have been treated so thoroughly in the classic work of Mr. Christopher Heath, that but little remains to be said upon them; and the section upon the lachrymal sac and nasal ducts presents the subject in a less exhaustive manner than many of the ophthalmological treatises *pur et simple*. But we would not with-

hold our high meed of praise to the author, for giving us a valuable and concise view of all that pertains to the region which he has entered.

In the arrangement of the work there are, as it seems to us, one or two errors of judgment. The fanciful divisions of sections and subsections present no advantages over the more common terms, chapter, and section. The large and most interesting collection of cases, which has been added in an appendix, might perhaps have been more profitably distributed through the text, in their proper places. As they are now arranged, it becomes rather wearisome to turn from the text to read the illustration, and, on the other hand, if we read the illustration first there is no reference to the text. And, again, if the plates, of which there are five, well executed, too, as are the most of them, had been placed together at the end of the volume, the reader would have been spared, in some instances, the inconvenience of turning to the index of plates to know where to find the illustration to which reference is made. These are, of course, minor points, but they all enter into the ideal of an entirely satisfactory book. We will give the reader a glance at the table of contents, and at some of the more striking points in the work.

The first section is devoted to the anatomy and physiology of the nose and the nasal fossæ. These may be regarded in four aspects: "1, as a sense organ; 2, as a part of the respiratory apparatus; 3, as part of the face and of the mechanism of expression; 4, as part of the vocal mechanism." The olfactory region proper is limited "to the upper half of the septum, the superior turbinated bone, and perhaps half of the middle turbinated bone, together with the under surface of the cribriform plate of the ethmoid." With regard to the physiology of olfaction, our author says:—

"Taking into consideration these two features common to odoriferous bodies, viz. (1), their organic origin, and (2) their ready oxydizability, we may perhaps conclude that *tendency to change* of a chemical kind is an essential quality of odorous bodies." And again: "However much we may hesitate to conclude from Professor Graham's observations that olfaction consists essentially in an oxygenation of the odorous substance, and in the stimulant effect of that chemical process upon the sentient nerves of the olfactory region, we may yet look hopefully upon this theory as the germ of a rational classification of odours."

The next section opens with a description of the instruments and procedure necessary in rhinoscopy. As a means of illuminating the anterior nares, the speculum of Fränkel is considered the most advantageous. The difficulties of posterior rhinoscopy are fully recognized, and the best methods of overcoming the intolerance of the palate-hook are found in the local application of lumps of ice, and in accustoming the palate to the use of the instrument. Non-ulcerative affections of the mucous membrane constitute the *subsections* of section first. In the treatment of catarrh our author is strongly in favour of the douche, as by Thudichum's apparatus, and files an exception to Dr. Roosa's theory, that it produces deafness. In epistaxis where plugging of the nostrils becomes necessary, the author advises the use of an apparatus devised by Dr. Rose, in preference to the canula of Bellocq with its accompanying plug. The wood-cut of this instrument resembles Molesworth's dilator, and we do not doubt that it would prove serviceable and of easy application. We observe, under the treatment of mucous polypi, an instance of the author's careful collection of all that pertains to his subject, in his quotation from the *Medical Record* of 1868, of a case of successful removal of a nasal polypus (our author frequently uses as the singular *polype*) by the injection of a solution of perchloride of iron. Under the stimulus of the same article we applied that method of treatment in one case, entirely without success, and were obliged to resort to the extraction with for-

ceps. Dr. Watson refers to the frequency of reproduction of these growths, and we are reminded in this connection of a remark of Maisonneuve, that in order to avoid with certainty this reproduction, it was necessary that the forceps should bring with them a small portion of the bone from the covering of which the polypus grew.

Section III. treats of Ulcerative Affections of the Mucous Membrane of the Nasal Fossæ; and among these we find an interesting account of the symptoms and pathology of glanders, as it affects the human subject. The chief characteristics as to its diagnosis are "the inflamed pustule on the skin in the early stage, and the copious yellow, sometimes viscid, discharge from one or both nostrils." A supporting treatment, and local applications, of carbolic acid lotions, or a solution of creasote, seem to furnish the chief means of resistance.

In the next section, Ulceration of the Bones and Cartilages, we find that our author treats the erosive syphilitic ulcer in what we might call the usual manner, *i. e.*, "the free use of the douche, the mercurial vapour bath, or full doses" (20 to 40 grains) "of iodide of potassium, with sarsaparilla and the judicious use of caustics." Under the latter he prefers the acid pernitrate of mercury, applied by means of a bit of pointed wood. He says: "There are two objects attainable by the use of caustics in syphilitic spreading ulcers. 1. It destroys the virus, and leaves a healthy granulating surface. 2. The caustic shuts up the exposed vascular channels in the bones by substituting for the unhealthy ulceration a plastic inflammatory action, and thus the poison is prevented from entering the circulation." In case of necrosis, and an operation for the removal of the sequestrum, the author seems to favour the operation proposed by Rouge of Lausanne, which consists in "lifting the upper lip and nostrils together, having first freed them by incisions through the mucous membrane of the mouth, and divided the cartilages at their attachment to the upper jaws. The anterior bony nares are thus completely exposed, and a very good view is obtained of the interior of the nasal fossæ, with a large space for the introduction of instruments."

In a subsequent section he also refers to this operation as a method of removing tumours of the antrum, and again for the removal of tumours in the nasal fossæ, and naso-pharyngeal cavity. That it results in no external scar is evidently in its favour; but we question whether, in the removal of tumours, it would be as available as the procedures of Sir William Fergusson or Langenbeck; the working space, it seems to us, would not be sufficient.

We would especially commend Section V., on Diseases of the Frontal Sinuses, to the careful consideration of the reader, as presenting all that relates to the subject in a manner not elsewhere to be found. The next two sections relate to the antrum of Highmore, and the lachrymal sac.

Under Section VIII., of Diseases of the Skin, the author acknowledges his indebtedness to Dr. Tilbury Fox. Our author has given a clear and concise account of the various forms of these diseases as they affect the nose. We observe, in the treatment of lupus, that he quotes from the last volume of Hebra and Kaposi, that their favourite application is Cosme's arsenical paste. We know that times change, and men change with them, but we have not yet forgotten with what a glow of satisfaction the distinguished Professor would bore the solid stick of "*Höllenstein*" into the nodules of nearly every "*armer Kerl*" afflicted with this terrible disease.

The Tumours of the Nasal Fossæ, and Naso-pharyngeal Polypi form the subject of the next section. The diagnosis between the different tumours, here to be found, is very admirably laid down, and will well repay careful study. The formidable operation requisite for their removal is well described accord-

ing to several methods. We agree with the author that the process of Verneuil, of plugging the posterior nares, would in most cases be "likely to impede rather than facilitate the operation." The success of Dr. Thudichum in the use of the galvano-cautery is worthy of note.

Section X. is upon Injuries of the Nose, comprising contusions, fractures, and dislocations, and injuries with the lodgment of foreign bodies. Under the treatment of fractures, our author recommends the use of Mr. Adams's ivory plugs in those cases where it is difficult to retain the nasal bones in position. The subject of the following section is Malformations, Distortions, and Mutilations of the Nose, and Rhinoplastic Operations. Under the first of these heads the author gives in detail Mr. Adams's method of forcibly straightening the nose, and holding it in place by plugs, or by a screw-compressor, or by the "nose-fracture truss," which latter is an adjustable truss-pad, with its bearing upon the nasal bone, and attached to a band passing round the forehead. Various mechanical devices for remedying mutilations are referred to, and special and deserved credit is given here, as in several other parts of the volume, to our countryman, Dr. Garretson, and his work on Oral Diseases and Surgery. The history of Rhinoplasty is given in a succinct manner, and particular attention is bestowed on the operations of Mr. John Wood, and Mr. Francis Mason, as well as that of their distinguished predecessor Dieffenbach. We regret that our author, who is usually so alert to all that has been published, should have overlooked the valuable record of cases by Dr. Buck. But after all that may be said and done, we cannot help thinking that the future of handsome noses, in so far as they are the work of art, lays rather with the mechanician than with the surgeon.

The remaining portion of the work is upon Functional Derangements, Intracranial Complications, and the Function of Smell in its relation to Hygiene. The term *anosmia* is introduced as indicative of the loss of smell, and the danger is pointed out which "*anosmic individuals*" run, from being secretly poisoned by the emanations from their own sewers!

At the close of the volume there is, as we have said, a closely printed appendix of seventy-five pages, containing reports of eighty cases illustrative of the text; and we repeat that many of these are of great value and interest. A carefully prepared and minute index is added, and, without such an index, we claim that no book is complete.

We have thus cursorily noticed the work of Dr. Watson, and we are sure that the voice of the profession will be uttered in no uncertain tones of praise and satisfaction at his production. It stands by itself, the leading monograph upon this subject. Nowhere can the practitioner turn to find, more completely under his eye, all that the field embraces. We have only to add that the letter-press is clear and handsome, and only a few typographical errors have eluded the proof-reader. The plates are well done, but the wood-cuts are certainly far inferior to their surroundings.

E. T. C.

ART. XLIV.—*Illustrations in Clinical Surgery.* By JONATHAN HUTCHINSON, F.R.C.S., etc. Fasciculus III. Folio, pp. 45–62. Philadelphia: Lindsay & Blakiston, 1876.

THIS fasciculus of Mr. Hutchinson's work follows its predecessors with commendable promptness. A careful inspection shows that it contains cases of

interest, although the plates are hardly as likely to attract attention as those contained in the first two numbers.

The first picture is an uncoloured lithograph, showing the appearance of a bony node of the arm, caused by inherited syphilis, and the history of the case is recorded in evidence of the accuracy of the diagnosis.

The next plate, or No. X. of the series, is a representation of cheiro-pompholyx, dependent upon disturbed nervous action, which appeared to have its origin in indigestion. While using the term pompholyx Mr. Hutchinson does not regard the case depicted, as in any way allied to true pemphigus.

In the letter press explanatory of plate No. XI., it is assumed, and to us it appears like only assumption, that the diseased teeth represented, owed their depraved condition to the use of mercury during infancy. Our experience has taught us that children are very rarely salivated, and we do not think Mr. Hutchinson makes out a clear case. The plate is, however, valuable, as showing the difference between the notched teeth of inherited syphilis, and teeth in which the enamel is diseased from other causes.

Plate XII. shows the post-mortem appearances of cases of chronic rheumatic arthritis. It is but rarely that the surgeon has an opportunity of examining the small joints which are most commonly affected by this disorder. The appearances represented are peculiar and possess value, although they do not aid in clearing up a doubtful diagnosis as so many of these illustrations do.

From the rapidity with which the numbers of this work follow each other, we should suppose that the publishers of them were meeting with the success which their enterprise deserves. As in the former parts, the execution is unexceptionable, and we anticipate a large demand for the work. S. A.

ART. XLV.—*Inhalation in the Treatment of Disease; its Therapeutics and Practice. A Treatise on the Inhalation of Gases, Vapours, Fumes, Compressed and Rarefied Air, Nebulized Fluids, and Powders.* By J. SOLIS COHEN, M.D., Lecturer on Laryngoscopy and Diseases of Throat and Chest, in Jefferson Medical College. Second Edition, revised and enlarged. 12mo. pp. 392. Philadelphia: Lindsay & Blakiston, 1876.

WHAT strikes one particularly in each of the many contributions made by Dr. Cohen to the medical literature of the branch of study in which he has become so well known, is the candid spirit and thoroughness with which his investigations have been conducted. Of this we are cognizant already by the perusal of, and frequent reference to, his work on Diseases of the Throat; his exhaustive treatise on Croup, in its relations to Tracheotomy, and many scattered articles from his pen. In the first edition of his book on Inhalation, its Therapeutics and Practice, these qualities are no less conspicuous than in his other works. Hitherto there has been an objection, however, to his publications. They usually lack order. And this is especially true of his descriptions of disease.

Complete as they may be, more method is at times desirable. In the perusal of his voluminous treatise upon Throat Affections, this deficiency is apparent even to the casual reader. Much of personal experience, and numerous collated facts are there recorded; but both are badly co-ordinated, and under one heading we are apt to find passages, which properly belong under another. We are glad to note that this short-coming is to a considerable degree remedied

in the present edition of Dr. Cohen's work on Inhalation. In its general arrangement, there is a marked improvement upon that of 1867. More method, the fruit of careful revision, is evident in the subdivisions of separate chapters. In one instance the order of parts is inverted, viz.: inhalation of nebulized fluids now occupies Part II. and not Part I., as in the first edition, and an additional part is made under the title of medicated atmospheres. Part I., in which the inhalation of airs, gases, vapours, and fumes is considered, is much augmented in its context, and new illustrations are interposed here and there. The drawings of apparatus are well executed and increase the practical character of the work. That portion of it which relates to the physiology and therapeutic uses of condensed and rarefied air, is almost entirely new, and is now one of the most important chapters of the volume. It contains the results, acquired within a few years in this department, by scientists in Germany and elsewhere. The apparatus of Waldenburg, of Biedert, of Fränkel, and still others—are accurately described.

Their employment in the treatment of certain affections of the thoracic viscera is presented. But while the laws of the pneumatic method are made known with completeness, their rational application to the cure of disease is not given with sufficient details. When more fully understood and accepted, we anticipate many good results from this treatment in well-adapted cases. Meanwhile it is a source of congratulation to have this subject treated of at some length in an American work by an author of merit. With respect to the manner of inhaling, Dr. Cohen is emphatic in his recommendation that it should be well done, if done at all. When, for example, by an effort of suction a medicated vapour fills the mouth, it is essential to make a strong inspiratory effort immediately afterwards, so that with the entrance of air the vapour may be drawn far into the lungs. With debilitated patients it may be necessary to employ the force of compressed air from suitable apparatus. To an imperfect manner of inhaling is often attributable the poor results achieved by this treatment. In the inhalation of the vapour of water, the ethereal volatile oils, or the decoction of aromatic plants, the temperature of the vehicle should be moderate. When it ranges from 110 to 120° Fahr., it is usually sufficient, and a great mistake is to have the water from which vapour rises too hot.

In this we fully agree with Dr. Cohen, inasmuch as we have learned to consider too hot inhalations a not infrequent cause of inflammatory disorders of pulmonary structure.

In speaking of his own experience in membranous croup with inhalation of the hot vapour from slaking lime, Dr. Cohen writes that, "in some dozens of cases, in private and in consultation practice, he has seen life apparently rescued through its agency." And he adds that, "of all the methods of treating croup advanced of late years, he knows of no other that has held its ground so well as this." Parts II. and III. are mainly a reprint from the first edition of the work, and we have not found there matter for new discussion.

Upon the subject of medicated atmospheres Dr. Cohen is brief. Nevertheless he evidently attaches much importance to "respiratory diet" in the treatment of certain cases of phthisis and chronic bronchitis, and *his* plan by which it may be utilized at home is worthy of trial by others.

In conclusion, we commend this work to those who desire to possess a thorough insight of what pertains to the science and art of inhalation in all its varieties.

B. R.

ART. XLVI. — *International Exhibition, 1876, Official Catalogue.* 4 vols. Philadelphia: John R. Nagle and Company. 1876.

THE International Exhibition held at Philadelphia in 1876, in commemoration of the Centennial Anniversary of American Independence, was on the 10th of May formally opened by the President of the United States.

Over two hundred and thirty-six acres on the west bank of, and overlooking, the Schuylkill River, in one of the most beautiful portions of Fairmount Park, have been inclosed, and there have been erected thereon about one hundred and fifty separate buildings designed for the use of the Exhibition, and covering an area of seventy-five acres of ground.

The principal Exhibition buildings are six in number, viz.: The Main building, Art Gallery, Machinery Hall, Agricultural Hall, Horticultural Hall, and United States Government building, and have a floor space of a little over fifty acres. As compared with the preceding International Exhibitions the total area under cover is larger by one-half than that of the largest, which was held in Vienna in 1873.

Within this vast area the civilized nations of the world have gathered together the evidences of their advancement in the sciences, arts, literature, manufactures, mining, and agriculture, forming an exhibit intensely instructive to the visitor. From other sources, information will be gained of those portions of the exhibition which interest the general public. The medical and sanitary exhibit, to which we propose to call the attention of our readers, and in which they are more particularly interested, we regret to say is neither so comprehensive nor so full as we had hoped to find it, owing probably to the limited interest it commands—an interest by no means commensurate with its importance.

The most extensive as well as the most important of the medical exhibits is made by our own government. The representation of the Medical Department of the Army is in charge of Assistant Surgeon J. J. Woodward, and is placed in a post hospital which has been erected on ground adjoining the Government building. This hospital, which is a model of the kind used at our military posts in times of peace, has been erected according to the approved plans for a regulation post hospital of twenty-four beds. It is built of wood, and consists of a central administration building, and two wards arranged as wings, each accommodating twelve beds. The wing for each ward is forty-five feet long, twenty-four feet wide, and fifteen feet high in the clear from floor to ceiling. Attached to each ward, at the outer end and behind, is a room for the earth closet, nine feet square. The administration building is thirty-five feet front by thirty-nine feet deep, and two stories high, with a back building 40 by 14 feet. Each story of this building is twelve feet high from floor to ceiling. A verandah ten feet wide surrounds the building with the exception of the kitchen. The floor of the whole building is raised three feet from the ground, and is supported on timber posts.

The wards have ridge ventilation for summer, and in winter are heated by two open fireplaces, placed back to back in the centre of the ward, and inclosing a ventilating air chamber between them.

The first floor of the administration building contains the office, dispensary, nurses' room, bath-room, and two closets, and in the back building, a mess-room, kitchen, and pantry. The second story contains the steward's room, attendants' room, store-room and spare room, and in the back building an isolation ward over the mess-room.

One ward of the model hospital is fitted up as such ; in the other are numerous interesting exhibits, among which the models of hospital cars deserve particular mention. These models, five in number, represent those methods of adapting the ordinary rolling stock of American railways to the transportation of the sick and wounded which were found most satisfactory during the war of 1861-5. They are constructed on the scale of one inch to the foot, and are complete in every detail.

No. 1 is a model of a surgeon's car, such as was used in the hospital train of the Army of the Cumberland. It represents an ordinary passenger car, with the seats removed, and with partitions and fixtures introduced, so as to lodge the surgeon in charge and his hospital steward, and give accommodations for the dispensary, with an office for the transaction of business.

No. 2 represents a kitchen car, belonging to the same train, which was constructed out of an ordinary passenger car with the seats removed, and with partitions and fixtures introduced for a kitchen, store-room, and dining-room.

No. 3 is a model of a car for sick and wounded, which was also constructed out of an ordinary passenger car, from which the alternate seats were removed, and mattresses supported on slats were placed between the remaining seats. On one side a wide door is constructed so as to admit of the easy passage of the severely wounded in litters. Eleven beds are thus formed, above each of which a field-stretcher, with its handles shortened, is suspended by means of two iron hooks, one at each end, fixed in the side of the car, and two iron rods terminating in hooks, which are fastened above to the roof of the car. Twenty-two beds are thus provided in each car. The lower beds, however, are so wide (about forty-four inches) that when deemed expedient two patients can be carried in each, thus increasing the carrying capacity of the car to thirty-three patients.

No. 4 is a model of a hospital car specially devised and built for the purpose, and used in the Army of the Potomac. These cars were forty-five feet long and eight and a half broad, inside measure. Six and a half feet were partitioned off at one end for the use of the medical officer.

"In the rest of the car, ten beds were constructed, by placing seats like those used in passenger cars, but without backs, at suitable intervals. On these, slats were laid for the reception of mattresses. Ten beds were thus formed, which, however, were narrower than those of the hospital car of the Army of the Cumberland (*viz.* thirty inches wide), being intended for the reception of a single patient each. A passage-way three and a half feet wide was thus left. Above each of these beds two ordinary field-stretchers, with their handles shortened, were suspended in the following manner: Opposite the middle of each of the seats supporting the lower beds, an upright wooden post was erected, extending from the floor to the roof, and firmly fastened at each extremity. Each stretcher was supported in its place by means of two iron hooks (one at each end) fastened to the side of the car, and two leather loops (one at each end) fastened to the upright posts. Beds were thus provided for thirty patients in all."

In order to give ready access to the wounded on stretchers, the door at the end of the car was made three and a half feet wide.

No. 5 is a model of a freight car fitted up for the transportation of the sick and wounded after the plan devised by Grund, and endorsed by the Prussian Commission of 1868.

"It consists in supporting three ordinary field stretchers in the front, and three in the rear part of the freight car, twenty feet long, by means of transverse wooden bars, resting on semi-elliptical plate springs. The springs are spiked at one end to the flooring, to keep the bars stationary, while at the other

end are rollers, to permit the yielding of the springs. The latter are surmounted by U pieces, or clips to receive the cross-bars. Four cross-beams and eight springs constitute the outfit requisite for the reception of six litters."

From the pamphlet descriptive of these models we learn that Assistant Surgeon Otis has recommended that military trains going to the front with stores should carry, suspended under the roof, a sufficient number of these springs, with the spikes required, to enable the car on its return, instead of going back empty, to carry comfortably, on beds improvised by means of the ordinary field stretchers, a number of sick or wounded, corresponding to its size. Dr. Otis has also suggested that these springs might be utilized in the conveyance of the wounded in ordinary army wagons.

In the army of the Cumberland, where hospital trains were extensively used during the late war, it is stated that the smoke-pipes of the locomotives were painted of a brilliant scarlet; the exterior of the hood, and of the tender, were painted of the same conspicuous colour, and at night beneath the headlight of the engine, three red lanterns were hung in a row. These signals were always recognized, and the trains were never fired upon or molested in any way.

In this same room are also exhibited models of the ordinary steamboats of our interior rivers and of sea-going merchantmen as adapted during the late war to the transportation of the sick and wounded. It would be impossible, however, without numerous diagrams which are not at our command, to make an intelligible description of these vessels.

Arranged in cases erected around the wall of this ward, are numerous pathological specimens from the Army Medical Museum, and some beautiful microphotographs, made by Dr. Woodward, adorn the window-panes.

The barrack hospitals of the late war are represented by five models. Of these, one is a model of the barrack ward which served as the unit, and by the repetition of which, "General Hospitals" were formed; the other four represent four of these general hospitals, viz.: The Lincoln, at Washington; Hicks, at Baltimore; and the McClellan and Mower, at Philadelphia. A full description of these, with perhaps a single exception, has been already published elsewhere.¹

The other rooms of the hospital are devoted to the exhibition of medicines, medical and chemical stores, and surgical instruments, medical books, blanks, chemical apparatus, mess furniture and utensils, and kitchen utensils, which are issued to medical officers on requisition. In the second story are exhibited artificial limbs, such as are issued gratuitously to those who lose their limbs in the service, litters, and stretchers, medical panniers, army medical chests, etc. In the office are also to be seen specimen copies of the various valuable publications which have recently emanated from the Surgeon-General's office. Here the bibliophile will be particularly interested in the reproduction by photography of the title or a specimen page of some of the oldest and rarest works in the National Medical Library.

With its usual intelligent liberality the Surgeon-General's Office have published pamphlets descriptive of the more important of its exhibits.

In the rear of the building are exhibited three hospital tents pitched end to end, such as are used in the field, and which are familiar to our readers, constituting the unit, by the repetition of which the necessary capacity is obtained. Here are also to be seen Perot & Co.'s army medicine wagons, Perot & Co.'s army mess chests, ambulances, etc.

The contribution of the Bureau of Medicine and Surgery of the Navy is

¹ See Hammond's *Military Hygiene*, Phila. 1863.

grouped in the Government building proper, and exhibits the outfit issued to surgeons in the Navy, and the manner in which the sick and wounded are cared for. Here are also to be found two models of hospital ships. One is of the "Idaho," which was converted to its present use, and is now stationed at Yokohama, Japan; the other is of the fore-part of the U. S. S. Hartford, and the sick bay therein. These models are in sections, and the interior arrangements are admirably displayed.

I. M. H.

ART. XLVII.—*Forty-sixth Annual Report of the Inspectors of the State Penitentiary for the Eastern District of Pennsylvania, for the year 1875.* 8vo. pp. 192. Philadelphia.

THIS document is a valuable contribution to our penalogical knowledge, and we heartily commend it to the attention of all who are interested in this subject. The points particularly noticed are regarded under the light of the most advanced ideas, with none of that dogmatism once so common in productions of this kind. The Inspectors discuss the matter of education, or, more strictly speaking, the ability to read and write, in relation to crime, and express renewed confidence in the superiority of the separate system, or, as they prefer to call it, *The Individual Treatment System*, over every other system of penitentiary discipline. It would hardly be within our province to examine their views, but there is one point on which we should have liked some further information. While deploring the evils arising from the open association of the convicts in their work, and insisting on the necessity of classification, they declare, with a remarkable disregard of the true meaning of the term, that the best classification is that which keeps every one alone, remote from the visible presence of his other criminal companions. Now, as a matter of necessity, they have been obliged to abandon this kind of seclusion to a considerable extent, and place two prisoners together in one room; and we are told that much of the work of the establishment is done by the convicts, of course, working together. We should suppose some positive results might have been observed as to the effect of this kind of association on the convicts. The time during which it has been practised would seem to have been long enough for the purpose, but not one word do we get on the subject. If association is so detrimental as the Inspectors represent, we cannot help asking why it is practised in doing the domestic work of the establishment, for we fail to see a necessity for it there, more than in any other kind of labor. For anything that appears to the contrary, we have a right to infer that it has been found, in a certain class of cases, to be beneficial to the institution, and not harmful to the convicts.

Dr. White, the physician of the prison, treats at some length, in his report, of certain traits in the medical character of the convicts, in a manner evincing much research and careful observation. He has profited by the light which has been shed on the philosophy of crime, if we may so call it, during the last dozen or fifteen years, and thus furnishes an earnest of future additional knowledge to this important subject. We willingly admit the requirement which he lays down as indispensable to any successful progress in this direction. "It is just as impossible," he says, "to thoroughly understand and appreciate the character and peculiarities, the physiology and pathology of the criminal mind without immediate and frequent personal observation of its workings and tendencies, as it is to acquire a rational and satisfactory knowledge of any bodily ailment without having seen a case of the disease." It is not a great while since, that the

criminal was universally regarded as the victim of adverse circumstances, as good in the main as other men, but unfortunately led astray by temptation or vicious associates. At length, the careful study of the criminal classes, indicated in the above statement, has forced upon many of those engaged in it, the conviction that as a result of organic conditions, the greater portion of these people are born with a propensity to criminal indulgences, always more or less independent of outward circumstance. This condition has received the name of criminal neurosis, and Dr. White distinctly recognizes its existence. It is manifested by the absence of remorse, as well as by the absence of repugnance to crime, and an inability to distinguish very nicely between virtue and vice, amounting often to a complete destitution of a moral sense. The physiological history of these people, embracing, of course, their ancestral relations, forces upon us the conclusion that it is, in fact, cerebral vitiation, in which the finer qualities of the brain considered as a material organ—those qualities that are essential to the higher degrees of moral and intellectual excellence—are lost. A wretched ancestry in which, for successive generations, the effect of insanity, habitual drunkenness, filthy habitations, and squalid surroundings, has been accumulating, is sufficient to account for this sort of degeneration. The statistics collected recently by prison physicians, especially Dr. J. Bruce Thompson and Dr. Mitchell of Scotland, strongly prove this point. A casual manifestation of this condition, consisting in a violent maniacal outbreak lasting several days, is frequent enough to have arrested the attention of all who have had much to do with convicts. It certainly is inexplicable on any other theory, psychological or pathological, though probably the mental disturbance owes its characteristic shape to the prison influences.

The moral dulness so characteristic of convicts is well illustrated in several cases given by Dr. White, who says that of the 150 cases in the prison of men convicted of murder, assault to kill, or rape, a large majority manifest this abnormal indifference. Sixteen instances are given in brief from which we select a couple.

"B. M., murderer, æt. 28; has 'destructive spells;' asked if he committed the murder, said, 'Of course I did; I wouldn't be here if I didn't do it' (laughingly); asked if it had not worried him; 'Oh yes, before my trial, but not since; I was afraid I was going to be swung,' says he prays for the 'other fellow' occasionally."

"P. H., murderer, æt. 47, serving out a ten years' sentence for wife murder; asked why he killed her, says, 'I didn't kill any one; my wife died from what I give her. I gave her a good licking, and I have never been sorry for it, and never will; she's better off where she is' (jocularly). Good prisoner, works hard, and never gives any trouble."

Dr. White believes that the practice of masturbation, so common among convicts, and made responsible for very much of the mental derangement that occurs among them, is, in fact, the effect of an "abnormal condition of the nervous system." He has observed that "confirmed onanists are rarely or never originally healthy, but are usually nervous, lymphatic, poorly nourished, and frequently of low intellectual grade, before the commencement of the habit." We have no doubt of the correctness of the etiology here given, though for a better reason than the alleged occurrence of the habit subsequent to this nervous, feeble condition, and the reason is recognized by Dr. White himself. He remarks, very justly, that while the insanity which is due to masturbation is regarded by practical writers as incurable, this is spasmodic or paroxysmal, and very curable. He might have added that there is a remarkable uniformity in the character of the mental disease arising from masturbation, whereby it is readily discerned by the practised observer. Had the descriptions of this form

of disease as given by Bell, Brigham, and other writers, been more carefully considered, we doubt if the mistake in question would have been so often made, not only by prison physicians, but by those in common practice. It was very common at one time, if it is not now, to look for the cause of insanity occurring in young persons, in masturbation, little or no reference being made to the form of the disease. And the mistake is sure to be made, if the patient confesses his guilt and regards it as the source of his troubles. In this case the actual succession of events is readily discerned when once the physician is governed by the real facts, rather than by the fancies of the patient. Some minor ailment proving obstinate, the young man is led at last, accidentally perhaps, to attribute it to the habit which he knows he has practised. He finds that it is regarded as detrimental to the health, both bodily and mental. He becomes alarmed, thinks of nothing else, reads books on the subject, and consults all sorts of doctors, whose advice is more likely to strengthen his fears than to furnish relief. And thus the case goes on from month to month and year to year, the mind and body steadily sinking until he becomes obviously and hopelessly insane. The case is duly chronicled as one of insanity from masturbation, though he had practised that vice not more, probably, than most young men do. We are inclined to think that Dr. White errs in the opposite direction, when he states that the vice is not more common in prisons, leaving out the exceptional cases, than it is in the outside world. We believe that convicts, as well as the insane, when confined, masturbate for lack of something else to do. It relieves the monotony of their existence by furnishing them with the only sensation in their power. The tables given in this connection are instructive; for they strikingly exemplify the intimate relations of masturbation, mental ailments, and ancestral vices and diseases to one another, and they indicate the course that future inquiry must take, in order to throw fresh light on the dark places of crime and penitentiary discipline.

I. R.

ART. XLVIII.—*Sanitary and Registration Reports.*

1. *Thirty-third Report to the Legislature of Massachusetts relating to the Registry and Return of Births, Marriages, and Deaths, in the Commonwealth. For the year ending December 31, 1874.* Prepared under the direction of the Secretary of the Commonwealth, by F. W. DRAPER, M.D., etc. 8vo. pp. 80, clxii. Boston, 1876.
2. *First Annual Report of the Board of Health of the State of Georgia.* 8vo. pp. 215. Atlanta, Ga., 1876.
3. *Second Annual Report of the City Physician and Register of Vital Statistics of Knoxville, Tenn., for 1875.* pp. 18.
4. *The Sanitary Condition of Boston.* 8vo. pp. 199. Boston, 1875.
5. *Third Biennial Report of the State Board of Health of California.* For 1874 and 1875. 8vo. pp. 242. Sacramento, 1875.
6. *Third Annual Report of the Secretary of the State Board of Health of the State of Michigan.* 8vo. pp. xlv., 170. Lansing, 1876.
7. *Rhode Island. Twenty-second Registration Report, year ending December 31, 1874.* Prepared under the direction of EDWARD T. CASWELL, M.D. pp. 104. Providence, 1875.

1. In this *Massachusetts Report*, addressed to the Legislature of Massachusetts, we find the statistics, with appropriate comments and generalizations, such

as frequently form a part, and often nearly the whole, of the reports of Health Boards. The separate publication of statistics and their interpretation on the one hand, and sanitary essays and investigations on the other, seems to us the wiser plan. Dr. Draper, who has compiled and edited the present work, has long been connected with the statistical and the sanitary work of the city of Boston, and of the State of Massachusetts. We are extremely glad to see that he has received an appointment as Lecturer on Hygiene in Harvard University.

From one of the tables of births we notice that, as in Philadelphia, considerably more than half the infants are born in the latter half of the year. This agrees, we believe, with observations in France, though opposed to English statistics. It does not seem to depend, in Massachusetts, upon any favourite time for marrying.

The mortality tables show a decided excess in the death-rate of male infants over female infants. Of all male decedents, more than one-quarter were less than a year old; while of female deaths, little over one-fifth occurred in that period.

Sixteen deaths are reported of persons over one hundred years old, two being set down at one hundred and eight. Twelve of these decedents were Irish. The trustworthiness of the statements is not indicated.

2. At the date of presentation of the *Report of the Georgia Health Board*, it had been in existence only four or five months. Nine regular physicians, ten years in practice, are appointed by the Governor of the State—one from each congressional district. These, together with the Comptroller General, Attorney General, and the State Geologist, constitute the Board. This body chooses one of its number as President, and appoints a Secretary from without. The latter officer is a physician, and receives a small salary. Three of the nine members go out of office at successive intervals of two years. Their successors will hold office six years.

The general sanitary concerns of the State, especial supervision of the sea-ports through which epidemics might enter, and the careful superintendence of the registration of births, deaths, and marriages, are entrusted to the Board. Among the standing committees through which the work of the Board is to be done, we notice one upon "Endemic, Epidemic, and Contagious Diseases;" one on "Hygiene of Schools, Prisons, and Public Institutions;" one upon "Geology and Topography;" and another upon "Poisons and Special Sources of Danger to Life and Health." An address to the medical profession of the State exhibits a very creditable appreciation of the importance and variety of the functions to be discharged.

The immense loss to the community which comes from the extreme prevalence of malarial disease is fully realized by the Board. Measures which shall banish or largely control this waste of life and money will be earnestly sought. The influences which affect especially the health and longevity of the coloured population will also receive careful investigation.

The Secretary, Dr. Taliaferro, has prepared a good practical report upon the "Organization and Duties of Local Boards of Health." We believe the Georgia Board will have no reason to regret their choice of this officer.

Dr. Henry F. Campbell presents an historical sketch of the various movements, at home and abroad, looking towards perfect registration, and the conservation of the public health. The aims, the methods, and the attainments, of the laws and organizations thus far created, are stated briefly.

Dr. Nottingham contributes an excellent statement of the most advanced views of school hygiene. Dr. Stanford expresses equally just ideas in a more

summary form. We are glad here to welcome another evidence of the remarkable interest, very recently manifested over the whole country, in the conditions which affect the health and development of school children. Dr. Nottingham is evidently in full sympathy with the views so ably stated by Dr. E. H. Clarke in his famous book upon "Sex in Education."

Dr. B. M. Cromwell reports upon the "Influence of Trees on Health." He closes with a strong recommendation of the culture of the Eucalyptus. We earnestly hope that extensive experiments may be made with this tree in our Southern States. Unless the marvellous rapidity of its growth and the great value of its timber have been grossly exaggerated, it should richly reward cultivation, independently of any specific virtues.

Reports upon epidemic and contagious diseases, the prevention of smallpox, the sale of poisons, and the condition of prisons, are all worthy of commendation.

Taken for all in all, this publication indicates a very creditable beginning. The spirit of the organization seems to be zealous and intelligent. The papers here printed are generally good in matter and form. A little more careful supervision of the printing would, however, have prevented the appearance of such exasperating misprints as "repay" for "essay," "several" for "sexual," "Jenne" for "Jenner," "Agel" for "Azet," "Bradie" for "Brodie," and several others.

3. This report, made to the municipal government of *Knoxville*, is eminently practical and sensible. Dr. Tadlock is thoroughly in earnest, and apparently a useful man in his place. With little heed to the graces of style he deals briefly with the work that has been done, and that which remains to do. It is very creditable to this small city of perhaps 12,000 or 15,000 inhabitants to have recognized, and striven to perform, its duty in this direction.

Dr. Tadlock comments on the excessive death-rate of the coloured population, as due to unfavourable sanitary and hygienic surroundings. It is 33.12 per thousand living, as compared to 16.45 among the whites. The total rate is 20.23.

The writer may well be proud of having effectually stopped the use of dangerous lighting-oils. At his recommendation a close system of inspection was established, with the result above noted.

4. Owing to a widespread conviction that the death-rate was larger than it should be, the *Municipal Health Board of Boston* were requested by the mayor to investigate the subject. To this end, that body appointed a committee of five most intelligent physicians, one only being of its own number. Their report is extremely able and elaborate. It sets forth, first, the extreme difficulty of the proper use and interpretation of vital statistics. The vast influx of foreign immigrants of all ages, adds greatly to that difficulty in this country.

The rather alarming rise in the Boston death-rate in 1872 and 1873 was directly due to smallpox and two or three other epidemics. The mortality of the entire State was much increased at the same time. In 1874, however, the city death-rate fell below its accustomed average, or, making corrections for change of boundaries, nearly to it. Meanwhile registration has been growing yearly more perfect. As compared to the mean death-rate of Philadelphia from 1861 to 1873 it is only 1.6 greater, or 24.5 to 22.9. Many British cities of its size have a much worse showing; and nearly all of the continental cities show a mortality in excess.

One great agency in rendering the rate larger than it is in some other places

is the very large Irish population. The proportion of this foreign-born class is 22.71 per cent. against 11.37 in Philadelphia. British life-tables show that at 21 years, Irish "expectation of life" is lower by about six years than the English; and the latter is no higher, to say the least, than is assigned to Americans of the Eastern and Middle States. The U. S. census shows that while the Irish constitute 33.3 per cent. of our foreign population, they contribute 41 per cent. of the mortality of that population. Instead of one-third, they furnish of foreign decedents by consumption 47.8 per cent., diarrhœal diseases 38.4, pneumonia 41.3, and bronchitis 53.4. It is unquestionable that children born here, of foreign parents, partake of the constitutional tendencies of their progenitors, and are natives only in name. The Boston registration, therefore, records its deaths according to parentage. Now, it appears, that in 1870, for instance, the population of foreign parentage, amounting to 58.4 per cent. of all, contributed 70.9 per cent. of the deaths. The proportion of deaths under one year old, per hundred births, is, for native parentage 17.9, and for foreign 19.8.

The fact last stated has peculiar importance when we learn that it is specially among its infant population that the mortality of Boston is unduly high. The death-rate of children under five, per thousand living at that age, is 96.2, against 62.6 for the U. S., 68.6 for England, 82.27 for London, 136.21 for Liverpool, and 46.5 for the county of Surrey. The latter is given as an example of low, rural mortality. Under one year, the Boston mortality is, relatively, still worse,—or almost as bad as in Liverpool. On the other hand, the death-rate over five years is less than in London, and not greater than in England. To show the effect of infant mortality, it is found that the London rate for children under five would have lowered the total Boston death-rate for 1855 from 25.4 to 22.7.

It appears, moreover, that the proportion borne by infant mortality to the total has gone on pretty steadily increasing.

In giving prominence to infantile diseases as the chief source of undue mortality, the writer does not neglect to indicate other maladies which prevail with more than general fatality. Zymotic diseases, and those of the respiratory organs, are to some extent preventible. They, therefore, come within the scope of this work so far as they are influenced by the sanitary condition of this city. Drainage, sewerage, vaccination, and a pure water-supply, are judiciously exhibited as the means for limiting or preventing much illness.

The diarrhœal diseases of infants which cause so great a proportion of the excessive mortality, seem to depend on the concurrence of great heat with density of population. Improper food, given through poverty or ignorance, is an active assistant to the other causes. The evil influence of the crowding together of the people seems to consist in the concentration of animal emanations and all kinds of filth. The classes who are most congregated are the ones who by ignorance and carelessness are the most certain to poison each other. They also are the most prone to give unfit or impure food to their children, and to administer drugs.

The methods of prevention here indicated may be summarized, as early and frequent vaccination, and the protection of person, air, food, and water from filth of all kinds. Sewage must be completely and rapidly removed, before putrefaction takes place. The accomplishment of this object is a very difficult task, into the details of which the report does not enter. A jealous watchfulness over the purity of the water-supply, and a rigid enforcement of the laws concerning milk, are here urged.

5. This *California Report* seems to us to be upon the whole a very creditable and valuable one. Several of its papers were prepared for other occasions, it is true; but as the object of the publication is the awakening and informing of the public mind, the Board is worthy rather of praise than blame for adopting such portions of the work of others as seem to be peculiarly suited to its purpose. The general tone and spirit of the book is earnest and enlightened.

Considerable attention is given to one of the great and pressing problems of the age, the relations and duties existing between society and the inebriate. Here and elsewhere appears a growing disposition to assert and exercise the right and even the obligation of the community to deprive the drunkard of that liberty which he abuses. This feeling, too, exists both among those who regard him as the victim of disease and those who hold him to be vicious.

Several papers relative to climatology and disease are presented, with valuable meteorological tables and maps. In the more important of these the secretary, Dr. Thos. M. Logan, whose recent death we have to regret, treats of consumption and of malarial fever in their relations, not to natural climate only, but also to modifications due to irrigation, destruction of forests, drainage, cultivation, etc. Miasmatic diseases, it seems, have very greatly increased in California. The changing of water-courses, resulting from mining operations; the alternation between overflowing freshets and drying banks and stagnant pools, caused or aggravated by destruction of trees upon the mountain sides; and the growing use of irrigation, are mentioned as probable causes. Without irrigation immense tracts of land would be valueless for agriculture. We are not quite able to discover whether the writer believes that the necessary irrigation could, or could not, be so arranged as to produce crops of wheat without crops of fever. He does, however, strongly advocate the planting of trees, not only on the mountains but in the fertile valleys. One tree in particular, Dr. Logan believes especially adapted to directly diminish the prevalence of malarious disease. The *Eucalyptus Globulus*, by its wonderfully rapid growth, its enormous absorbing surface of roots, and possibly, also, by some specific virtue in the balsamic and fragrant emanations from its leaves, is thought to possess extraordinary power in the prevention or destruction of miasma. It is said to thrive admirably in California, and to produce timber of great value.

Dr. W. P. Gibbons doubts the specific virtues of the tree, but does not doubt its peculiar usefulness due to its enormous absorbent capacity. He points out with great clearness the good effects which forest culture may be expected to produce.

Some space is given to a consideration of "earth-closets" and "pail-closets." We think there can be no possible doubt that appliances of this sort ought to be provided in all prisons and many other places, at once.

From the *Sanitary Record*, of London, is copied an account of Capt. Lier-nur's pneumatic, or vacuum, system of removing excreta. Steam engines working air-pumps, create a vacuum (approximate) throughout a network of underground tanks and iron pipes. Then a stopcock on each street-main is opened, and the contents of each house receptacle instantaneously sucked into the main. A regular series of such movements daily passes all excreta into a vacuum chamber, where the waste steam of the engine affords heat enough to transform them into poudrette. Improved water-closets or air-closets are also a part of this plan. The details are too complicated for present explanation; the system is said by some to work with absolute perfection, and to pay its own expenses, or even return a profit; while others report unfavourably of it. It has worked to admiration as applied to a few streets in certain European cities. The sanitary gain to be expected from wholly excluding fecal matter from the

common sewers, and thus from the air and water, needs only to be mentioned to be appreciated.

An account of the sewerage systems of London and Paris, drawn up by one of the engineers of the London Board of Works, was obtained and given for publication by a member of the California Health Board. It is illustrated by maps and diagrams, and may give many useful hints to American planners and builders of sewers.

6. Again we take pleasure in welcoming an admirable volume from the *Michigan Board of Health*. The entire cost of the organization to the State for the past year has been less than \$4000. We hope that the people will duly appreciate the almost inestimable value of the intelligent services so cheaply obtained. Not only does the Board give to the public most important warning, counsel, and instruction, upon matters closely affecting life and health, but also, by a most extensive system of correspondence with local boards and with physicians throughout the State, it is amassing information as to climate, water, general sanitary influences, the prevalence of different diseases, and the movements of epidemics, which will prove of the greatest future value.

The president, Dr. Hitchcock, has prepared an excellent exposition of the need, formation, and functions of local health-boards. It would serve as a useful guide and manual for such bodies everywhere.

The indefatigable Prof. Kedzie has been investigating the agricultural use of insect poisons. All these are attended with a certain degree of danger, inseparable from their general presence and employment. The white preparations of arsenic should never be used. Paris green is at least of equal efficacy, and not, like the others, liable to be the cause of terrible mistakes. Careful observations and experiments have convinced Dr. Kedzie that this agent, as employed to destroy insects, does no harm to the plants, nor to the quality of the foods which they afford, nor to the purity of water derived from the soil. Any fears, therefore, that potatoes or wheat, protected from insects by this poison, might be made unwholesome, are wholly groundless.

A paper on *Trichinæ* adds some original cases to the literature of that subject.

Rev. Chas. H. Brigham, of the committee on occupations, contributes a thoughtful and brilliant paper upon the Influence of Occupations upon Health.

Another contribution from Dr. Hitchcock, deals with the dangerous errors commonly observed in the methods of disposing of excreta. Illustrative cases are given, both old and new, together with practical hints and directions for the avoidance of danger.

The practical working of a new law, providing for a State Inspection of Illuminating Oils, is described by Inspector A. A. Day. We believe this enactment, perhaps amended as here suggested, is capable under faithful execution of saving an enormous amount of property and very many lives.

Dr. Arthur Hazlewood has been sending to the numerous correspondents of the Board circular letters of inquiry as to the character of the water drunk in their vicinities. The questions are exceedingly minute, embracing some three dozen particulars; and the answers convey much instruction.

An article upon Ozone, by Prof. Kedzie, does not so much assume to publish new discoveries, as to state the facts already ascertained, and the theories current, and to indicate the probable value of further investigations. Nevertheless, the writer gives us, very modestly, some results of his own experiments, and some opinions which he has formed. His suggestions and surmises are well adapted to direct attention to the as yet unascertained influence of ozone upon health and disease.

Dr. Henry F. Lyster illustrates the sanitary influence of drainage in cities, by reference to the history of health and disease in Detroit.

7. The Registration system of *Rhode Island* has long been regarded as one of the most perfect in the country. The small size of the State and the density of its population have undoubtedly much influence in producing this high degree of perfection. We believe, however, that much credit is due to the wise arrangement by which the conduct of the work is assigned to a committee of the State Medical Society. This committee changes but little from year to year, and is always composed of men known to possess liking and ability for researches in vital statistics.

Dr. Caswell directs attention to the fact that these statistics do not show that closeness of connection between deaths by cholera infantum, and elevation of temperature, which has been believed to exist in New York and elsewhere. Indeed, a table showing these facts for the hot months of nine successive years exhibits several very striking contradictions to the supposed rule.

The unusually cold April—coldest in forty-three years—was signalized by almost double the usual mortality from pneumonia.

Deaths by scarlatina were largely in excess of any previous year, reaching 10.9 per cent. of total mortality. Of 462,312 occurred in the first half of the year. The most fatal months were June, 63, and January, 57; the least fatal, September, 18.

Dr. Caswell remarks that the relations of mortality and temperature are yet far from being fully ascertained.

Looking at the records of past years, a very gratifying and pretty regular diminution is apparent in the proportion of deaths due to consumption. The same tendency would seem to obtain in the case of typhoid fever.

Births were absolutely more numerous than ever before; relatively to population, less than the three years previous. These were in the proportion of 104.9 male to 100 female infants. This ratio of sexes has varied very singularly and greatly in different years, once leaping in succeeding years from 100.3 up to 112.9, again from 100.9 up to 108.6, and from 102.3 up to 110.5, with almost equally abrupt changes in the other direction.

Marriages were less numerous than in 1873. The proportion of those wholly American, as compared to foreign and mixed, decidedly diminished, while the percentage of the two latter increased.

Divorces seem to be increasing. They amounted in 1874 nearly to one-tenth the number of marriages.

It is a curious fact that, among the coloured population, births, during the last fifteen years, have been gaining upon, equalling, and of late surpassing, the deaths. In other words, a natural increase now occurs where was formerly a tendency to extinction.

B. L. R.

ART. XLIX.—*The Cause of the Commencement of Parturition.* By CHARLES M. CROMBIE, M.B., M.C., Author of *Remarks on Midwifery to Midwives, etc.*, Fellow of Obstetrical Society of London, etc. 8vo. pp. 38. London: J. & A. Churchill, 1875.

PASSING over a large portion of the preliminary matter, we come down to the subject proper of the essay, *i. e.*, the determining cause. Dr. C. believes, as has been taught by Dr. Braxton Hicks, that the uterus is active during the

whole pregnant state; and that it is also ready at any time to perform its muscular office of expelling its contents, as shown by its intermittent action; by the possibility of abortion at any period, either spontaneously or designedly; and by the continuance of expulsive contractions after the delivery of the foetus, until the placenta and every clot of blood are expelled.

What prevents this activity of the uterus culminating in the expulsion of its contents before the termination of pregnancy, is believed by the author to lie in the antagonistic hydrostatic power of the liquor amnii. The final termination of this antagonism he attributes to a gradual absorption of this fluid, its diminishing volume in proportion to the size of the foetus, allowing the latter to be more directly acted upon by muscular contractility; and, last of all, the disintegrating process, which ultimately separates the placenta from the uterus. Dr. Crombie believes that the existence of the foetus *in utero* is a struggle maintained by the antagonism of opposite forces.

We are not prepared to accept this explanation in the measure in which it is offered to us, as we can hardly reconcile its teachings with the results of treatment, in postponing an active labour of ten hours, accompanied by a decided hemorrhage, at four and a half months, until the termination of the full period of gestation; or at the period of eight months, with the same result. The power of expulsion exists certainly in the uterus from a very early period of gestation; but this force is clearly on the increase as pregnancy advances; and is most active at the full development of the organ. Opium, in some instances, appears to possess the power of arresting premature uterine action, so that it ceases for the time, and may not be renewed until the normal period of parturition. We are of the opinion that the cause of uterine expulsive action lies in the nervous system, and is one of the mysteries connected with our organization which is beyond our mental comprehension. Our voluntary muscles have a certain power under the will, but how much greater is the contraction when influenced by the causes which produce the spasms of tetanus or epilepsy. We have seen "the intermittent action" of the uterus decidedly painful and threatening for several weeks together, but the woman did not abort. Why? Because the exciting cause in the nervous system, whatever it may have been, was less than that which determines the *full* force of the uterine contractions. We have seen a woman in labour on two consecutive nights, and delivered on the third, in whom the labour-pains ceased on the two intervening days. We cannot readily explain this upon the hypothesis of Dr. Crombie.

R. P. H.

ART. L.—*The Student's Guide to the Practice of Midwifery.* By LLOYD ROBERTS, M.D., M.R.C.P. London; Physician to St. Mary's Hospital, Manchester; and late Vice-President of the Obstetrical Society of London, etc. 12mo. pp. 317. Philadelphia: Lindsay & Blakiston, 1876.

DR. ROBERTS dedicates his little manual to the venerable Dr. Thomas Radford, honourable consulting physician of St. Mary's, and celebrated as one of the few successful performers of the Cæsarean operation in Great Britain, and author of a work upon the statistics of this operation in his own country.

The volume as presented by the American publishers is in good type, and generally well illustrated, many of the wood-cuts having an old familiar face, being carefully selected from more comprehensive works. We are glad to see also the compliment paid to Prof. Dalton of New York, in the use of his illus-

trations in explanation of the development of the ovum, and circulation of the placenta. We are not partial to manuals, it must be confessed, and particularly upon obstetrics, as the whole subject may be presented in its full completeness, if disconnected from its cognate branches, viz. : the diseases of women and children, in one large octavo volume. As an elementary work for students or midwives it may, in some respects, be of advantage, or may serve as a book of ready reference to a country practitioner in his round of business ; but we prefer a more comprehensive presentation of the subjects treated.

Dr. Roberts, having twice operated by the Cæsarean section, devotes seven pages to the subject, which he denominates "the forlorn hope of the obstetric art." His reflections upon the unfortunate results in his own country are worthy of notice ; which he computes as but 15 per cent. of women saved, to 57 per cent. upon the continent, and attributes it to the longer delay practised in Great Britain.

We quote a few of his remarks as worthy of special notice :—

"In order that Cæsarean section may not prove a forlorn hope, it should not be deferred until, as too often happens, the patient's powers are reduced to the lowest ebb. It is greatly to be feared that in many cases the operation has been performed as a sort of obstetric absolution in deference to the rule that a woman in travail should not be allowed to die undelivered." (page 244.)

"Our enlarged experience in abdominal surgery derived of late years from the frequent successful performance of ovariectomy, cannot fail to aid us in the treatment of Cæsarean section, and tends to encourage the hope that the future percentage of deaths will place Cæsarean section in a far more favourable position than it at present occupies." (page 246.)

"The maternal mortality appears to be greater in cases of osteomalacia than in rickets." (page 247.)

This may be, as relates to the whole statistical table, but Winckel, who has operated much oftener than any continental authority, and saved a much larger proportion of women, has been led to this frequency, by living in a district where osteomalacia is unusually common. In America, almost all deformed pelvises are due to rickets, and malacosteon is scarcely ever met with. Promptness of action has been the main cause of our advantage in comparison with Great Britain.

As an obstetrical manual where such is desired, we think that of Dr. Roberts one of the best now offered to the profession, as it comes with authority, and he possesses the ability to condense, and at the same time present a subject clearly.

R. P. H.

ART. LI.—*On Stethometry. Being an account of a new and more exact Method of Measuring and Examining the Chest, with some of its Results in Physiology and Practical Medicine. Also an Appendix on the Chemical and Microscopical Examination of Respired Air.* By ARTHUR RANSOME, M.D., M.A. (Cantab.), Examiner in Anatomy and Physiology and Pharmacology in the University of Cambridge. With illustrations. 8vo. pp. xii., 207. London: MacMillan & Co., 1876.

THIS treatise contains descriptions of several new instruments which were devised, the author tells us, in his preface (1) to mark the situation of various thoracic phenomena ; (2) to investigate more thoroughly than has hitherto been possible the complicated mechanism of respiration. He admits that of these instruments, four are not likely to come into general use, but believes that the

remaining two, the chest-rule and the 3-plane stethometer, or some modification of them, are means of accurate measurement that will be found useful in the every-day study of disease. The last named of these instruments was described in a paper which appeared in the *Transactions of the Medico-Chirurgical Society* for 1873, which was noticed in the number of this Journal for October, 1874. He claims that it is of great service in the diagnosis, prognosis, and treatment of phthisis and other diseases of the chest, and supports his assertion by reference to numerous cases in which he has used it.

The other instrument, the chest-rule, is designed to facilitate the taking of notes, and "consists of thin narrow spring steel, so arranged as to form a rectangular parallelogram, 6 inches long by 3 inches wide, and divided into eighteen squares of exactly 1 inch length of side." It is so light and flexible that it may be carried in a case-book and readily applied to the chest. By its aid we may mark upon a diagram figure, the exact position upon the surface of the chest, at which, for instance, auscultation has enabled us to detect the signs of a cavity.

We will not deny that these instruments may be of service to us in the study of disease, or that they may be useful to the lecturer as means to demonstrate to his class the existence and situation of disease, but we do not see any good reason for believing that they will ever come into general use. The greater the skill a physician possesses in physical diagnosis, the less we are inclined to think will he be disposed to have recourse to them. In a case of phthisis in which the author says "no trace of thoracic mischief could be discovered by myself or by an eminent Manchester physician," the fact that the patient had lost a brother with the disease, would it seems to us, have awakened the suspicions of a careful observer, even if the general symptoms had been less unmistakable than they appear to have been.

The book, which is evidently the fruit of much labour, is illustrated with numerous diagrams and tables. J. H. H.

ART. LII.—*A Text-book of Electricity in Medicine and Surgery, for the use of Students and Practitioners.* By GEORGE VIVIAN POORE, M.D. Lond., M.R.C.P., etc. 8vo. pp. 291. London: Smith, Elder & Co., 1876.

THIS is decidedly the best work on electricity, for the purposes of the general practitioner, that we have yet met with. It not only goes fully into the practical uses of this important therapeutic agent, but treats at sufficient length of electro-physics. The books on this subject which we have heretofore seen, either have been devoted too exclusively to the scientific study of electro-physics, or have treated of the therapeutic uses of electricity without regarding its theoretical considerations.

The book opens with a chapter on "*principles*," in which the author places before his readers all that it is necessary for them as practitioners to know of this part of the subject. Very properly he begins with details which are elementary, but without which no one can ever expect to gain a knowledge of electricity. Comparatively few physicians are conversant with these first principles, for electricity is one of those studies which is seldom included in a course of medical lectures, and text-books on medical electricity, as a rule, take it for granted that their readers are familiar with the elementary part of the subject.

It is really refreshing to find here everything made so clear and simple.

Ohm's law is explained so that it is as easy as a, b, c, and the terms "quantity," "intensity," "density," and "tension," which are invariable stumbling-blocks, are rendered so plain that the reader cannot help understanding them.

The subject of induction and the principle of the faradic machine, which are often difficult of comprehension, are made very clear by the use of diagrams taken from M. Tripier's *Manuel d'Electrotherapie*.

Chapter II. concerns batteries, and the author describes and recommends those instruments which he has personally found best. They are often apparatus with which in this country we are unfamiliar, but the principle on which they act is the same as that of all other batteries. The form of cell recommended for the galvanic current is the Leclanché element, and from our own experience with it we are prepared to endorse the high praise which Dr. Poore gives to it. On page 9 there is a cut of one of these cells, which differs from any that we have seen in this country, but it must be much more convenient for medical uses than those found here. Its capacity is that of a two-ounce vial, and the entire top is sealed with openings for the elements, etc. to pass through, so that the evaporation of the fluid must be very slight, and there can be no running over of the solution on the outside of the glass. Our readers are no doubt aware that the Leclanché element consists of zinc and carbon in a solution of chloride of ammonium. The carbon is packed in a porous cell with peroxide of manganese.

Twenty or thirty pages are devoted to the physiology of electricity, and an interesting account is given of the author's experiments on the effect of the galvanic current on muscular power. The author is of the opinion that the sympathetic in the human subject may be acted upon by the constant current, but as it cannot be isolated from the adjacent nerves in the neck, we are ignorant of the effects of galvanism on the sympathetic, and remarks that "beyond occasional dilatation of the pupil he has never seen any indication of the nerve responding to the stimulus." He states positively his belief that the brain may be influenced by the galvanic current.

This has always been a mooted question, and we observed that a recent reviewer of Bauduy's "Lectures on Diseases of the Nervous System," in the *New York Medical Journal*, remarks with much satisfaction that "the reader will be spared frequent allusions to galvanization of the brain, and other absurdities now exploded."

In the chapter on the "Method of using Electricity," Dr. Poore gives the most satisfactory and detailed account of how to use galvanism and faradism. He recommends Kidder's reophore because the sponge, which is attached at the base to a metallic disk, is in the shape of a cone, and if it be applied gently to the surface, the point forms a small electrode, but if pressed down firmly it becomes flattened out into a large one. Our own experience is that in using a sponge electrode, unless it be pressed firmly on the surface so as to bring it in close contact with the metallic base, it requires a very strong current to be felt, and then by varying the amount of pressure, as one is apt to do, inadvertently, you give the patient an unnecessary amount of pain.

In speaking of the diagnostic uses of electricity, the author advises that, when we wish to test the relative electrical condition of a nerve or muscle on different sides of a patient, we should place one electrode on the median line of the body. For example, in comparing the electrical condition of the arms he attaches one reophore to the nape of the neck, and the other he applies to the muscles of each arm. Dr. Poore does not seem to be acquainted with the very convenient stationary electrodes in use in this country. They consist of a plate of metal covered by a large sponge on one side, and on the other side is a piece of India rubber, larger than the sponge, which prevents the wetting of the

patient's clothing. This electrode can be placed at the back of the neck, or on any part of the spine, or over the sciatic nerve.

We are glad to see that electrical baths are pronounced useless.

The author describes a method of using galvanism which is peculiar to himself. It consists in "the combination of a continuous galvanic current with voluntary muscular exercise." We believe this was first described by him in the *Practitioner* in 1873, and is chiefly used by him in the treatment of writer's cramp.

A large amount of space is given to the consideration of writer's cramp, and, as the author is well known for his researches in this disorder, we are glad to have the opportunity of learning fully his method of treating it.

A large number of cases are given to illustrate the uses of electricity, and are valuable because they are not only the author's own cases, but are those of other well-known writers.

A portion of the work is given to the surgical uses of electricity, including electrolysis, the treatment of internal aneurisms, and galvano-cautery.

The book is written in an agreeable and easy style, and is as condensed as the subject will permit of. One great advantage about it is that all of the best authorities on electricity are fully quoted, and the cream of their researches is given to the reader.

We congratulate the author on his success in accomplishing his object, which he modestly says in the preface has been "to produce a book which will be of use to students and practitioners," and from its handy size and good print, to say nothing of its intrinsic merit, we are sure it will prove very popular.

W. S.

ART. LIII. — *History of the Association of Medical Superintendents of American Institutions for the Insane, from 1844 to 1874, inclusive.* Compiled from the records of the Association by JOHN CURWEN, M.D., Secretary of the Association. 8vo. pp. 121. 1875.

THIS very neat little volume is a complete register and directory to American Hospitals for the Insane, and their officers, past and present. Opening with the briefest possible sketch of the origin of the Association, Dr. Curwen gives an account of the organization and first meeting, Oct. 16, 1844, at Jones's Hotel, Philadelphia. The late Dr. Samuel B. Woodward, of the Mass. State Hospital at Worcester, was chosen President, Dr. Samuel White, of the Hudson Asylum, N. Y., Vice-President, and Dr. Thomas S. Kirkbride, Secretary and Treasurer. Some dozen or fifteen members formed the original body. Committees were appointed, reports and discussions listened to, and business transacted. The next meeting was held in May, 1846, since which time the sessions have been held nearly every spring. The place and date of each meeting, with names of members present, changes of officers, appointment of committees, resignations or deaths of members, and the more important expressions of opinion by the Association, are all reported in a condensed form. Obituary notices of deceased members are inserted in connection with the last meeting at which they were present.

A list of past officers with dates of service, and one of American hospitals for the insane, with the names and period of service of their superintendents from their opening, add much to the value of this work as a book of reference.

It would be difficult to overrate the influence of this Association in elevating the character of our insane hospitals. Every idea or suggestion looking towards improvement has been thoroughly canvassed in its annual meetings. The young or inexperienced or less qualified superintendent has had the opportunity of listening to men who had spent the best part of their working lives in caring for the insane. The sessions, too, being always held in close proximity to some institution for the treatment of mental disease, afforded visitors the means of noting and comparing methods and arrangements. And as nearly every hospital was, or expected some time to be, visited by the Association, there was a constant incentive to improvement. The peculiarly isolated and secluded life of the hospital superintendent, as compared to the general practitioner, renders some such break in the monotonous round of his duties almost as needful for his mental and physical health as it is helpful to his specialistic training.

B. L. R.

ART. LIV.—*A Manual of Minor Surgery and Bandaging.* By CHRISTOPHER HEATH, F.R.C.S., Surgeon to University College Hospital, and Holme Professor of Clinical Surgery in University College, London; Honorary Fellow of King's College. Fifth edition. 12mo., pp. 308. Philadelphia: Lindsay & Blakiston, 1875.

THE fact that this work has gone to a fifth edition in its own land, and has been reprinted in this country, may be considered a sufficient proof that it has met the needs of those for whose use it was designed, and renders any extended criticism upon it at this late date superfluous. We have taken the trouble to compare a considerable portion of the volume with the corresponding portion of the fourth edition, and find that the additions and alterations, though by no means numerous, are generally judicious and valuable. American surgeons, indeed, will be surprised to find that, in the chapter on dislocations, there is no reference to Dr. Bigelow's investigations, and, in fact, no mention whatever of the method of reduction by manipulation in the account of either shoulder-joint or hip-joint luxation. If it is actually the case that the majority of British surgeons know no better way of treating dislocations of the hip than by making simple extension and counter-extension, we must consider them ignorant of one of the most brilliant achievements of modern surgery; but we prefer to think that his fellows' practice is better than Mr. Heath's teaching, and that his chapter on dislocations has been overlooked in the revision of his volume.

This opinion is strengthened by the observation of other marks of haste in revision, though, as five years have intervened since the appearance of the previous edition, we fail to see why such haste was imperative. Thus while an account is given of Dieulafoy's method of pneumatic aspiration, yet in the section on urinary retention the house-surgeon is still, as in the fourth edition, "strongly recommended to tap the bladder through the rectum, as being at once the safest operation and the easiest to perform." We regret, by the way, to observe that in introducing an account of Dieulafoy's operation it has been thought necessary to omit the reference made in the previous edition to Dr. Bowditch's labours in the same field. As we have heretofore had occasion to point out, a considerable portion of the credit claimed for the French surgeon is justly due to his American predecessor.

This book presents a very neat appearance, and its illustrations are decidedly better than those commonly seen in works of a similar character.

J. A., JR.

ART. LV.—*Reports of Hospitals for Insane.*

1. *Pennsylvania Hospital for Insane*, 1875. pp. 70. Philadelphia, 1876.
2. *State Lunatic Hospital of Pennsylvania*, at Harrisburg. Year ending Sept. 30, 1875. pp. 49. Harrisburg, 1875.
3. *State Hospital for the Insane*, Danville, Pa. Year ending Sept. 30, 1875. pp. 48. Danville, 1875.
4. *Asylum for the Relief of Persons Deprived of the Use of their Reason*. March, 1875, to March, 1876. pp. 30. Philadelphia, 1876.
5. *Iowa Hospital for the Insane*, at Mount Pleasant. Nov. 1, 1873, to Oct. 31, 1875. pp. 52. Des Moines, 1875.
6. *Northern Hospital for the Insane*, Oshkosh, Wisconsin. Year ending Sept. 30, 1875. pp. 74. Madison, Wis., 1875.
7. *Illinois State Hospital for the Insane*, at Jacksonville. Dec. 1, 1872, to Nov. 30, 1874. pp. 48. Jacksonville, 1874.
8. *Longview Asylum*, Ohio. Nov. 1, 1875. pp. 48. Cincinnati, 1875.
9. *State Lunatic Hospital at Northampton, Mass.* Year ending Sept. 30, 1875. pp. 87. Boston, 1876.
10. *Butler Hospital for Insane*. 1875. pp. 37, Providence, R. I., 1876.
11. *Nova Scotia Hospital for Insane*. 1875. pp. 57. Halifax, N. S., 1876.

1. IN his report as superintendent of that noble corporate charity, the *Pennsylvania Hospital for the Insane*, Dr. Kirkbride expresses with much emphasis his conviction of the very great importance of frequently varied occupation, amusement, or locality, in the curative treatment of insanity. To be allowed to brood or mope in mental vacuity, or in the thrall of some morbid thought or feeling, hour after hour, he believes the worst thing possible for the patient. Accordingly he seeks to provide a constant renewal of gentle distractions, which shall break up, many times daily, the habit of diseased thought and feeling. Certainly no man in the specialty has a better right to urge this course upon others, for he has long practised most faithfully what he preaches. One of the later additions to the great variety of means thus provided, has been the introduction of ornamental wood carving, or rather sawing, in the ladies' department. The Dr. has often observed how some occupation, even not seeming especially attractive, has given the first impetus to recovery. To large numbers of patients, the wonderful labours now culminating in the Centennial Exhibition have proved sources of most wholesome interest, and will so continue for months.

The claims of the insane yet unprovided with hospital accommodation are forcibly presented. To say that great and costly buildings have been erected, and that the further provision asked for would require immense outlay, in no way alters the plain duty of the community. The mere delay in completing the hospitals at Danville and at Warren, condemns six hundred unfortunates to a year's imprisonment in jails, almshouses, and other unfit places. With many, this will imply life-long insanity instead of cure. With all, it is an injury and an injustice. The actual financial loss to the State, though less immediately apparent, is not less real. Besides the State hospitals uncompleted, for Philadelphia alone are needed two large hospitals. There are 1200 insane at Blockley, where only 600 should be. To say that the existing state of things is a disgrace to Philadelphia, is no reflection upon the officers of the present hospital, who certainly deserve great credit for well-doing under immense discouragement.

To furnish proper hospital treatment for the insane, says Dr. Kirkbride,

"money faithfully expended . . never yet made any State or city poorer." "What they have done for a part, must be done for all, and this is demanded by their whole history, by a wise economy, and the urgent claims of a common humanity."

Referring to the vulgar clamour against "palaces" for the pauper insane, the writer deprecates excessive expenditure, but adds that "the essentials are the same [for all classes], and any plan which diminishes the cost to one-half of what it should be, simply takes away just that much from its means of usefulness." This is as true as the propositions of Euclid; and any attempt to evade its logical results will only result in present disappointment, and future retribution.

Dr. Kirkbride takes occasion to present a brief but excellent Centennial Retrospect of American work for the insane. In the course of this, while rejoicing in the abolition of all cruel measures of restraint or treatment, and the reduction of all coercion to the lowest permissible degree consistent with the welfare of patients, he defends the exceptional use of mild restraint, against the fanatical attacks of certain British disciples of unreason. Home discipline and home treatment have failed, he reminds us, before the patient is sent to a hospital. Owing to that failure the other course is taken; and it is mere folly to insist upon limiting the latter wholly to the methods of the former. It is because restraint is needed, that the hospital is tried; and the restraint called mechanical may be much more merciful, and less irritating, than incessant struggling with strong-armed attendants.

2. In the report of the *Pennsylvania State Hospital*, at Harrisburg, Dr. Curwen has spoken some judicious words of warning and criticism as to the treatment of young children by parents and by teachers. In early childhood, when the young mind is extremely impressible, and before books are used, parents seem lamentably unconscious or careless of obligation. They treat a child like a toy or a pet dog—like anything but a moral and responsible being—starting upon a career to last throughout eternity. By turns caressed, teased, trifled with, indulged, and punished, children are the sport of parental whims and humours. No self-control, or self-sacrifice, or worthy regulating principle of any kind, is taught them. All too soon are they turned over to the teacher, in both day-school and Sunday-school. Of him or her it is only required, that the poor infants be kept quiet as many hours as possible, and crammed with as many "studies" as may be. All sense of responsibility is shifted from the parental shoulders; and, in sooth, it does not much burden the average teacher.

No wonder that in the popular management of children, Dr. Curwen finds a predisposing, or an exciting, cause of insanity.

3. Out of some 260 patients in the *State Hospital* at Danville, sixty are paying patients, so called. Of these, only *two* pay as much as the actual cost of support per head in the hospital. This illustrates what we have, in other numbers of this Journal, adverted to as one of the functions of State Hospitals. It is the receiving of patients whose friends are poor, but who dread the stigma of pauperism. Here are many of this class receiving the benefits of hospital treatment, at less than cost, but preserving their self-respect by payments which, for their means, are by no means light.

The partially completed building is already crowded, and there is urgent need for finishing it as originally planned.

4. The pleasantly situated *Asylum at Frankford* presents a modest record of continued usefulness. Improvements in the grounds, in several smaller buildings, and in the means of occupation and amusement, are here noted.

5. The trustees' portion of the Report of the *State Hospital at Mt. Pleasant*, Iowa, contains a brief record of a very curious experience in hospital government. Two or three years ago, Dr. Ranney, who had been the eminently successful head of the institution from its beginning, felt that certain recent legislation so impaired his usefulness that self-respect obliged him to resign. His first assistant succeeded to the superintendency. Somehow the machinery did not continue to run with its wonted smoothness, and on July 1, 1875, in consequence of urgent requests and assurances of the trustees, Dr. Ranney again accepted the superintendency, just vacated by Dr. Bassett's resignation, while the latter, for a time at least, again assumed the duties of assistant under his old chief. Nothing more honourable to all parties than this last revolution could well be conceived.

Dr. Ranney takes occasion to correct some of the more common popular misapprehensions which have attached to this and other similar institutions. He also urges the immediate relief of the house from the injurious presence of insane convicts, several of whom, he says, do much mischief to other patients, and cause the officers continual anxiety.

We are glad to learn that the obnoxious act which caused Dr. Ranney's resignation in 1873, has, by amendment and by different legal interpretation, been shorn of its worst features.

Dr. Ranney prints, and commends to the readers of his report, the preamble and resolutions adopted a year ago by the Association of Superintendents, deprecating State boards or committees with power to interfere with the management of hospitals.

The report closes with a manly expression of confidence and regard towards Dr. Bassett, with the hope that he will consent to retain indefinitely the position of first assistant.

6. Dr. Kempster's report, from *Oshkosh*, Wisconsin, is extremely interesting and instructive. He presents many curious illustrations of the hereditary transmission of the tendencies to insanity, crime, moral imbecility, and other vices of low or perverted organization.

He speaks highly of control exercised over the epileptic paroxysm, and over resulting maniacal fury, by the nitrite of amyl.

Insanity is a disease of deterioration or degeneracy. Nearly always it will be found that the recognized malady has been preceded by a period of failing vitality. This, says the writer, adds to the importance of providing proper treatment as soon as the nature of the case appears. For grave lesions have probably already affected the cerebral structure.

Some details of the structure and working of heating and ventilating apparatus are not without interest.

Here, as everywhere, we find appeals for more hospital accommodation; and, as is equally general among alienists, counsel against any attempt at "cheap" provision.

The pathological investigations with the microscope, for which Dr. Kempster has acquired an honourable fame, are regularly continued.

7. The report of the trustees and superintendent of the *Illinois Hospital*, chiefly records those improvements and replacements which are, or should be, almost incessant in such establishments.

In some remarks upon treatment, Dr. Carriell adopts the happy comparison of a former writer, who said that a proper hospital is to the diseased mind what a splint is to a broken limb. Both are designed to give rest and support, and to put the affected parts in the best position for the curative action of nature, and the assisting efforts of the physician. And especially is the analogy perfect in the respect that the succor should be immediate. For inducing a natural sleep, the Dr. finds a thirty-grain dose of chloral, given to the patient in bed, after the wards are quiet, especially effective and free from ill consequences. He would seem to imply, however, that ill effects might be feared from regular and prolonged use of this drug. The bromide of potash has appeared, in many cases, to prevent the recurrence of epileptic fits, or to diminish their frequency. Protracted use diminishes weight and strength. In some cases, nothing supplies the place of opium. Warm baths, with cold water on the head if indicated, are found to be most powerful tranquillizers. A bath and a stimulant are often enough to procure sleep. Tonics, including phosphorus, rich diet, and milk-punch, are in frequent use.

8. The *Longview Asylum* seems to be even worse crowded than most of the State hospitals—which is saying a good deal. Built for 350 patients, it is required to care for 592. There being no separate establishments for idiots or epileptics, and no place to which incurable cases can be drafted, the wards of the hospital are choked with a peculiarly hopeless class. To make the matter worse, few admissions occur in the first stages of the disease, when recovery would be probable. This unfortunate experience, we fear, is pretty equally noticed in other institutions. For the hopelessly demented and idiotic patients, Dr. Bunker urges the building of a separate house, to accommodate two or three hundred, and to be connected with the administrative department already provided. This would enable him to do greater justice to the acuter cases in the unburdened wards of the original hospital.

9. Those who have read Dr. Earle's reports need not be told that his portion of the report of the *Northampton Hospital* is suggestive and readable. Whether he deals with treatment, or asylum economy, or with the duty and policy of the State, his views are sure to command respect. Upon the management of patients, their occupations and amusements, and the duties of those who care for them, his ideas are advanced and well considered. His economic management would seem to be extremely able and successful.

Under the working of the legislation which insured writing materials to all, and placed a locked letter-box in each ward—twenty-one in all—to be opened periodically, only by a member of the Board of State Charities, three letters only, addressed or supposed to be addressed to the Board, or Lunacy Commissioners, or the Superintendent, were found by the authorized collector. These were shown to the doctor, who here prints them entire or in part. They are amusing reading, for all but the sapient law-givers who insured their preservation.

10. The chief improvements of the year, at the *Butler Hospital*, are the benefits found to result from its connection with the city water-works, giving unlimited pure water with a pressure great enough to throw streams over the highest roofs, and the completion of the new and admirable "David Duncan Ward." Dr. Sawyer's report contains a detailed description of the planning and construction of this extension, and of the advantages which it offers. Both his report and that of the trustees, speak in heartfelt words of the death of Mr. Robert

H. Ives, one of the oldest friends and managers, and one of the chief workers and givers, ever connected with the hospital.

11. We find from the report of the *Nova Scotia Hospital*, that increased provision for the insane is as much needed there as in the States. Dr. De Wolf advises the prompt commencement of two new asylums at the extremities of the Province.

Some dozen years ago a young woman was admitted with acute melancholia and suicidal mania. Her determination to kill herself was desperate and her attempts were frequent. At last, relaxed vigilance on the attendant's part gave her an opportunity to hang herself. She appeared dead when discovered, but was saved by artificial respiration after hours of anxious toil. After lying in a critical condition for forty-eight hours, with occasional convulsions, protruded tongue, and suffused face, she suddenly aroused, assumed a natural expression, and was herself again. No relapse occurred, though many years have since passed.

Another recovery is reported of a female patient after fifteen years' residence.
B. L. R.

ART. LVI.—*American Association for the Care of Inebriates. Proceedings of the Sixth Meeting*, held at Hartford, Conn., Sept. 1875. 8vo. pp. 99. Baltimore, 1875.

THERE has for some years been a growing conviction, here and in Great Britain, that society has a duty to perform in regard to the class of persons given over to intoxication. Insane asylums have cared for, and have benefited, many; but it is well understood not to be their proper work, and indeed to have seriously interfered with it. Institutions designed solely for the treatment of the class in question have been organized, on varying scales, and with varying pretensions. We do not doubt that much good has been done in many cases. A certain shadow of mistrust has, however, been cast over these establishments, by some unfortunate traits in the history or character of individual institutions and managers. It is to be hoped, however, that early errors and mistakes will be corrected, and that what is good and true will remain and bear fruit.

This publication contains, besides the minutes of the annual meeting, several essays read before the Association. These deal with the causation, character, and various aspects of the evil under consideration. While giving prominence chiefly to inebriety as a disease, the writers do not ignore its existence also as a vice. Many very curious facts are stated, and singular relations exhibited.

Confinement in gloomy prisons, with insufficient light and air, poor food and poor sanitary surroundings generally, is stated to be often followed by habitual inebriety, in released prisoners formerly sober. Many curious instances of inebriety dependent on influences which would seem to be wholly disconnected, are here given. Inadequate nutrition, in the subject or his progenitors, is, however, one of the best recognized causative agents.

We are very glad to see a judicious refutation of the popular exaggeration which attributes all crime to intoxication, and which would promise us an immediate millennium as the result of universal total abstinence.
B. L. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Case of Congenital Hydronephrosis, with Remarks on the Secretion and Excretion of Urine in the Fœtus, and on the facts which tend to prove that during the latter months of Intra-uterine Life the Urine of the Fœtus is passed into the Cavity of the Amnion.*—This is the title of a paper communicated by Dr. HENRY MORRIS to the Royal Medical and Chirurgical Society, May 9th. A case of congenital hydronephrosis, associated with imperforate rectum, in a child of five days old, was described. The abdomen was considerably distended at the time of birth, and continued to increase in size up to the day when surgical aid was sought. After the passage of a catheter along the urethra, a large quantity of urine escaped, and, after an operation had been performed for the purpose of establishing a communication between the rectum and anus, a free discharge of meconium followed. The abdomen subsequently became quite flaccid, but the child died of exhaustion on the seventh day after birth, and on the second day after the operation. No *post-mortem* examination was allowed by the parents. From the symptoms of the case, it is to be inferred that a slight membranous obstruction in the urethra, sufficient to frustrate the slender efforts of the child to expel the contents of the distended bladder, was broken down by the catheter. Other possible explanations are considered, but rejected as being less probable than that above stated. Congenital hydronephrosis, like each of many other congenital deformities, frequently coexists with one or more malformations in the same subject. Thus clubfoot, harelip, imperforate anus, and the absence of a prostate gland have each been associated with congenital hydronephrosis. It is more frequent to find both kidneys affected than only one, and the most common cause of the condition is imperforate urethra or impervious ureters. The question is considered whether, in these cases, the enormous distension of the urinary organs arises from over-excretion on the part of the foetal kidneys, or from retention of urine through some mechanical obstruction of the passages. It is concluded that the number of cases in which the obstruction and the distension have occurred together is too great to allow of their coexistence being considered accidental, yet the only relation which can possibly be conceived between the two conditions is that of cause and effect. The question which next arises is: "Does not the urine, during the later period, at least, of gestation, ordinarily flow into the liquor amnii, so as to avoid causing congenital hydronephrosis?" Upon this subject, although physiologists are silent, there have been many opinions expressed in favour of an affirmative reply. In illustration of this, excerpts are contained in the paper from the writings of Lee, Prout, Kennedy, Billard, and Howship, and from the Obstetri-

cal Transactions. Before accepting this view as to the excretion of the urine, further proof is sought for in the analysis of the liquor amnii, since there ought to be evidence of some of the constituents of urine in that fluid, if the view be correct. From analyses made by Rees, Frommberg, Wöhler, Gusserow, and others, the presence of urea and many of the salts of urine in the fluid of the amnion has been proved beyond question. On the other hand, the urine of the foetus in some cases of congenital hydronephrosis has been found to be devoid of urea by Kennedy and Madge. It ought not, however, to be inferred from this that urea had never been formed in these foetuses, but rather that, owing to the crystalloid character of urea, this substance has escaped from the blood and from the retained urine of the foetus into the blood of the mother: and it is further suggested that urea may in this same way even disappear altogether from the liquor amnii when fresh quantities cease to be excreted from the foetal organs. But, dismissing all speculative reasonings, it may be stated that the following are well-ascertained facts: (a) That when an obstruction has existed in the urinary organs of the foetus, the secretion of urine has gone on to a sufficient extent to cause changes similar to those which are seen in the urinary organs of adults after retention. (b) That the liquor amnii has been proved to contain urea, besides many salts such as those which are formed in normal urine. (c) That foetal urine in some cases of hydronephrosis has been found not to contain either urea or uric acid, or to contain urea only in very small quantity. The conclusions which appear to be warranted by these facts are: 1. That urine is secreted in considerable quantity during intra-uterine life. 2. That this quantity is far too great to be stored up in a normal bladder and normal ureters. 3. That during the latter part of gestation, at least, urine is passed off through the urethra of the foetus into the sac of the amnion. 4. That the proportion of urea in foetal urine is in all probability smaller than it is in the urine secreted after birth, and that, as in cases of congenital hydronephrosis both urea and uric acid have been absent from the urine, it is possible they may also be absent from the liquor amnii. 5. That the quantity of urea in liquor amnii is very small, not exceeding 5 per 1000. 6. That the gradual decrease in proportion of albumen in liquor amnii as pregnancy advances (from 10.77 per cent. in the fourth month to 0.82 at the ninth month, as stated by Taylor) gives some support to the view that the fluid of the amnion is constantly altered by the admixture of some non-albuminous fluid, such as urine, and that this conclusion will be further strengthened if future analyses show that the proportionate quantity of urea and the salts of urine in the liquor amnii increases as the proportionate quantity of albumen diminishes. 7. That the presence in liquor amnii of other of the constituents of normal urine, besides urea, gives support to the same opinion. Although there is something revolting in the idea that for a period of many weeks every human being has lived and floated in a medium partly composed of its own urine, yet the fact ought not to be ignored, as it is a matter of great interest and importance in the development of the life-history of the foetus, while the condition of the foetus which results from an obstruction to the escape of the urine ought to be borne in mind by the accoucheur, as it may give rise to tedious and protracted labour, or may even render parturition impossible to the mother till after the destruction of her child.—*Lancet*, May 13, 1876.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

2. *Value of Alcohol as a Food in Fever Cases.*—Prof. C. Binz, of Bonn, discusses this important subject in an interesting article in the *Practitioner* for May. He says that we must regard as a food any substance which, when taken into the system, can serve (1) towards building up the tissues, or (2) towards supplying the warmth and vital force necessary for the proper performance of the various functions of the body.

As the list of positive examples is so extensive, these points can better be illustrated by reference to certain negative ones. Thein, for instance, is not a food, as it passes through the system without undergoing decomposition; nor is ether a food, since it cannot be taken in quantities sufficiently large to contribute by its oxidation any appreciable weight, warmth, or vital energy¹ to the body. Gum Arabic is not a food, because it is not absorbed in the intestinal canal.

Alcohol fails, perhaps, to fulfil the first office of a food according to the foregoing definition, since it is incapable, as far as we know, of supplying material to build up the tissues, but when given in small doses, oft repeated, especially in the case of a sick person, it may be said to surpass all other substances as a species of easily burning fuel, from whose combustion the heat required to generate vital force may be derived. Indirectly, it also answers the first of the aforesaid purposes, for though it may furnish actually no new building material, it spares the reserve supply of fat in the body, which would otherwise have to be burned to give the necessary warmth. In sickness, where but little or no fatty material is supplied by the food, this is of course conservative, but in health no need is felt for a specially combustible form of fuel, and so we see how many persons in good health, under the combined influences of good living, alcohol and bodily inactivity, grow very fat, the alcohol supplying a good deal of the heat required by the system, and some unburned fat continuing to be stored away year after year.

I have convinced myself by a series of experiments that alcohol is completely destroyed in the animal organism.² If pure it leaves no taint upon the breath, and where this is present it is attributable to some of the ethers or fusel oil. Thus, in the experiments referred to, I found only traces. I used three different methods: the chromic acid and the iodoform test, and Geissler's Vaporimeter. Their correctness was always controlled by known dilutions in water containing most minute fractions of alcohol. The urine may, under favourable circumstances, contain as much as three per cent. of all the alcohol consumed. This is the highest figure I have been able to get. Aldehyde and acetic acid, the derivatives of alcohol, were absent. The facts observed all seem to lead to the conclusion that alcohol in the body, just as in the flame of the spirit-lamp, is oxidized to carbonic acid and water.

Such being the case, it is evident that every molecule of alcohol burned within the system must yield, not only warmth, but that power to accomplish work with which the development of caloric is always accompanied. Let us see how much.

From direct experiments made by Favre and Silbermann, and by Frankland in England, with a view to ascertain the relative heating power possessed by various combustible substances, gases, etc., it was found that alcohol gave the figure 7; pure coal gave 8, and hydrogen 34.5; which is to be understood as meaning, that one cubic centimetre of alcohol generates heat enough during its combustion to raise the temperature of seven litres of water 1° Cent.; that one cubic centimetre of coal sufficed to raise eight litres 1° Cent., and so on. The unit of the scale thus arbitrarily set up is represented by the amount of heat required to raise the temperature of *one* litre of water 1° Cent., and to this unit the name *Calorie* has been applied. A healthy adult produces about 2300 such *calories* a day. Now, in the process of consuming 100 cubic centimetres of absolute alcohol, equal to one litre of good hock, we set free within our organism 700 *calories*, or nearly one-third of the whole amount of warmth which is produced by the system under mixed diet within twenty-four hours.

With this result given by alcohol, let us now compare the heat-producing power of certain other ingesta as determined by Frankland; for instance, cod-liver oil, a substance which may be taken here as a type of the fatty elements

¹ Ether, it is true, acts as a cardiac stimulant, but as such it contributes no *new* force to the heart; all it does being to excite the heart so as to make it put forth what force it already has more energetically. In other words, instead of contributing fresh power, it drains away more rapidly that which is left.

² Cf. Centralbl. f. d. Med. W. 1875, p. 371. Berlin.

of food in general, being one of the most digestible. Its calorific power is represented by the figure 9.1. Four tablespoonfuls taken four times a day—about 50 cubic centimetres—develop 455 *calories*, supposing the whole quantity to be digested, and this, it will be seen, is only about four-sevenths of what 100 grammes of alcohol supply, or in other words, not more than would be furnished by 65 grammes of alcohol.

The advantage possessed by the latter over the oil is obvious. Besides being infinitely more pleasant to take, the alcohol, if largely diluted with water, in the form of good wine, is readily digested, even in the weakest stomach; and, as has been shown, it is easily and completely disintegrated in its passage through the system. On the other hand, all fatty substances require for their emulsion, absorption, and assimilation, a very considerable amount of work, which of course is only that much more drain upon the powers of a patient.

Thus we can understand how it is that a continual supply of wine enables the patient to resist for a certain length of time the ravages of a severe disease, where no other form of nourishment is accepted by his stomach. Every practising physician who recognizes the value of wine in therapeutics will be able to call to mind cases of typhoid fever, where for several days nothing was taken but wine and water, the patient retaining his strength pretty well all the while. Bricheteau, a French surgeon, relates the case of a boy affected with diphtheria, upon whom the operation of tracheotomy was performed, and who for a month afterwards would take nothing but sweet wine, of which he consumed one and a half bottles daily, besides two ounces of rum, and who during the whole time did extremely well. In this case the sugar of the wine of course contributed something as a food to the whole effect, but being present in the sweetest wine only in small proportion, it could have accomplished only very little.

In such cases it would be unreasonable to suppose that the vital powers of the patient are kept up solely by the stimulating properties of the alcohol, for the nervous system and heart require nourishment as well as any of our other organs, and they cannot be kept going so long by stimulants alone. On the contrary, by so urging them on to activity day after day, without supplying any food to compensate for the wear and tear resulting from such augmented action, it is certain that we would exhaust their forces more quickly than by any other plan of proceeding. Alcohol certainly acts as a stimulant in conditions of extreme weakness, but given for days together when no other combustible material is being supplied to the system, it burns in the tissues, and by means of the heat thus generated, furnishes the body with warmth and the strength necessary to carry on its vegetative functions.

Prof. B. points out the great importance of administering a form of alcoholic beverage free from fusel oil, for if we introduce into the system of a sick man any alcoholic mixture containing fusel oil, the evil effects produced by the latter upon the brain, in this case already weakened by disease, will manifest themselves yet more strongly than they would upon a healthy one.

Finally, he sums up his views, as far as the same concern the practice of medicine, as follows: 1. That alcohol is very frequently a stimulant of transitory power; 2, that in relatively large doses it can serve as a vigorous antipyretic; 3, alcohol, given in small and oft-repeated doses, is a food particularly adapted to cases where the stomach can take in no other "combustible material" to supply warmth and working energy to the organism.

While I thus share in the views which the late Dr. Anstie so ably upheld in England, I do not hesitate, on the other hand, to declare, with respect to the requirements of the healthy organism, that I consider the use of alcohol in health as entirely superfluous.

Where the digestion is healthy, and where a sufficient transfer of nutritive material takes place from the food to the blood, the human body is capable of accomplishing all the functions for which it is designed, and that without the use of spirituous drinks. But the case assumes a different aspect as soon as these two conditions fail. A physician may therefore recommend total abstinence to healthy persons in every instance, but he throws away one of the most valuable of medicines if he carries this principle of *teetotalism* into the sick-room.

3. *Application of Quinia in Fever.*—Prof. C. Binz makes (*The Practitioner*, June, 1876) the following practical remarks on this subject: "It is to be given (1) in large doses from 0.5 to 3.0 grammes (8–48 grains); (2) in a digestible form, that is to say, together with some acid; and (3) during the time when fever tends to decrease.

"The first has been proved by numerous observations in the sick-room. Such strong doses are not poisonous, but agree on the whole better with young than with old people. My second rule refers to the fact that in fever the stomach does not contain sufficient acid to dissolve the sparingly soluble sulphate. As to the hour of administration, we have to deal here, as a matter of course, with similar conditions as in ague fever. The cause of fever is overcome by quinine most easily when its activity is lowest.

"The complaint has often been raised that quinine so easily causes sickness, and it is generally supposed that the vomiting is produced by direct irritation of the stomach. This is not proved to be the case. On the contrary, if the doses of quinine are continued, at the most only a small part of the second or third are ejected. All later ones remain. The stomach absorbs it as hitherto, the nervous system by degrees tolerates the alkaloid, and now only it begins to act upon the chemical processes of the feverish organism. It is very important not to make use of impure quinine. Quinine containing the less efficacious cinchonine is the most deceptive, for this adulteration is somewhat difficult to detect, at least for many practitioners. Much the same must be said of salicine, the bitter principle of willow."

4. *Salicylic Acid as a Febrifuge.*—Prof. C. Binz states (*The Practitioner*, June, 1876), that "Salicylic acid possesses in all outward respects a resemblance to quinine. It combats the malarial poisoning (Senator, Buss)—although less surely and effectually than quinine—during the period of apyrexia, where, as is well known, neither the pulse nor respiration necessarily need present the slightest abnormality. It is, like quinine, a powerful antizymotic, which can be introduced into the organism in large quantities, circulates there a considerable length of time, and is given off again—at least partially—in an unchanged condition. Even the ringing in the ears and the slight deafness characteristic of cinchonism are not wanting in connection with the medication with salicylic acid. A complete agreement between its behaviour and that of quinine toward certain disease-producing agencies, known, as must be confessed, only by their effects, does not exist. This we have already seen in speaking of intermittent fever. Acute articular rheumatism, a disease in which quinine avails so little and salicylic acid so much, furnishes a second and converse example. Considering the chemical dissimilarity of the two substances, it is not to be expected that there should exist a similarity between their modes of action on more than the general points involved. This general resemblance, however, is unquestionably present, and so we shall have to seek an explanation of the manner in which their therapeutic action is exerted in the same channels."

5. *Effects of Salicylate of Soda in Reducing the Temperature of the Body.*—Professor KÖHLER, of Helle, shows that both salicylic acid and the salicylate of soda, when injected into the blood in rabbits, not only cause a fall in the blood-pressure, but also a marked diminution in the frequency of the pulse, and also in that of the respirations; but that whereas the soda-salt acts equally well, whether injected into the jugular vein or into the stomach, the salicylic acid in aqueous solution (1 in 300) has no effect, when given by the stomach, either in reducing the blood-pressure or retarding the pulse. It is, therefore, according to Köhler, almost certain that salicylic acid becomes converted into its soda-salt by combination with the alkali present in the intestinal secretions, and that it is absorbed into the blood and produces its physiological action in this form. The reason why a solution of the acid injected into the stomach of a rabbit remains inactive is, probably, that it is unable to combine with sufficient alkali to supply an effective dose of salicylate of soda. According to the physiologist, therefore, salicylate of soda is preferable to salicylic acid as a

drug, because its action is direct, whilst that of the latter is indirect; and it is further preferable, because it possesses all the useful properties of the acid without its disadvantages; and—what especially interests us here—because it has a most distinct power of reducing the temperature of the body, not only in fever, but also in the healthy state. Thus 26 cubic centimetres of a solution of 1 in 30, injected into the stomach of a rabbit weighing two kilogrammes, reduced the temperature from 36.2° to 34.6° , and even to 34.0° C.; and the same quantity of a solution of 1 in 60 injected into the jugular vein reduced it to 35.2° . On the other hand, Professor Köhler, from his own observation of the effect of the salicylate (in one or two five-gramme doses) on patients with typhoid fever, completely agrees with those observers who have praised its anti-febrile properties in that disease; and he states that the temperature can be reduced by it for twenty-four hours, or even longer. The fact that the salicylate, according to Köhler, reduces even the normal temperature, agrees with Riess's results in the healthy human subject; for the latter found that five grammes reduced the temperature 0.9° C. on an average of twenty-three experiments in from four to six hours. Comparing the other results of experiments on animals with the effects of the drug on man, we find that there is a discrepancy between the statements of observers—which, however, is perhaps more apparent than real; thus, whilst Riess and Goldammer observed that the only effect of the drug on the pulse was to make it stronger, without diminishing its frequency, Nathan observed not only that the number of beats became much smaller, but he also found that the respirations fell almost to their normal number. He gave, however, much larger doses than the other two—as much as eight grammes at a time, followed sometimes in two hours by a second dose of four grammes; and as it was after very large doses that Köhler found the pulse and respirations so much affected in rabbits, it seemed likely that it may require similarly large doses in man to modify the functions of respiration and circulation.

All things considered, the salicylate of soda promises well as an anti-febrile remedy. Much less unpleasant to take than quinine, producing no irritation of the digestive organs or of the kidneys, and completely free from narcotic properties, time may not improbably confirm Professor Köhler's estimate of it, when he predicts for it the greatest future of any of our scanty stock of drugs which reduce the temperature of the body.—*Med. Times and Gaz.*, May 6, from *Centralblatt Med. Wiss.*, Nos. 10 and 11, 1876.

6. *On the Therapeutical Use of Nitrite of Amyl.*—Dr. ROBERT PICK (*Deutsches Archiv für Klin. Med.*, Feb. 1876), after describing the physiological properties of the nitrite of amyl, adduces the experience of several German physicians as to its therapeutical uses in various affections, chiefly of a nervous character. In cases of epilepsy, for instance, the inhalation of a few drops of the nitrite, taken at the moment of the sensation before the paroxysm, acted as a palliative, and sometimes warded off the attack altogether. Dr. Mäurer, of Laubbach, near Coblenz, has given the drug in several complaints in which a spastic contraction of the vessels appeared likewise to play a part. In hemicrania, for instance, he found it very useful, and also in the colic of menstruation, and in anæmia of the brain; and as he thinks that many cases of epilepsy depend on this anæmia, caused by spastic vascular contraction, his success with the nitrite in some epileptic cases is explained. Dr. Pick relates a few cases from his own experience where the nitrite was more or less useful, the complaints being hemicrania, neuralgic pains in the face and head, and supra-orbital neuralgia. He also found it useful in a case of convulsions in a child, and he has often employed it with beneficial and rapid effects in cases of fainting fits.—*Brit. and For. Med.-Chir. Review*, April, 1876.

7. *Physiological Action of Gelseminum Sempervirens.*—In a series of articles which have recently appeared in the *Lancet*, Dr. BURDON SANDERSON has shown that gelseminum exercises a very remarkable influence on the function of respiration, and that when the drug is given in fatal doses death takes place, as in poisoning by curare, by gradual arrest of the respiratory

movements. Facts have also been referred to which plainly indicate that this result is not, as in the case of curare, to be attributed to suspension of the functions either of the motor nerves or of the muscles to which they are distributed, so that the conclusion can hardly be avoided that this agent exercises its influence directly on the cerebro-spinal centres, and particularly on those parts which preside over the rhythmical respiratory movements.

In a further consideration of this subject (*Lancet*, April 1, 1876), Dr. Sanderson concludes that the drug acts on the respiratory function by paralyzing the automatic respiratory centre; but that the process of extinction of the respiratory movements, which might otherwise be expected to be gradual and progressive, is prevented from being so by the intervention of disturbances of which the explanation is to be found in the imperfect arterialization of the circulating blood.

8. *Gelsemium Sempervirens*.—The Nos. of the *Lancet* for January 22d and March 18th, contained an account of some experiments made by Dr. SYDNEY RINGER and Mr. WM. MURRELL on the action of this article. These experiments show: "1. That, in animals, gelsemium primarily affects respiration. 2. That it reduces the frequency of the respiratory act. 3. That the affection of respiration appears before the paralysis, and passes off earlier. 4. That gelsemium causes death by asphyxia. 5. That, if artificial respiration be maintained until the drug can be eliminated, recovery will take place.

"Such are the facts. What is their explanation? On what part of the respiratory system does the drug exert its influence? Dr. Burdon-Sanderson has kindly consented to make the experiments necessary for the solution of these problems, and will publish the results in the ensuing paper."

9. *Antiseptic Properties of Madder Root*.—M. DE RESTAING read a note to the Academy of Medicine of Paris on this subject. A specimen of meat had been preserved from July 27, 1875, to February 27, 1876, in a jar containing powdered madder, which was opened a dozen times to verify the results obtained. The weight of the meat had decreased from 119 to 25 grammes, without any smell, or any development of living organisms having shown themselves. From these experiments, the author thought it would be advisable to institute similar trials for the preservation of dead bodies; perhaps by this method means might be found of conciliating the presence of cemeteries in the vicinity of great cities with the sanitary conditions which now so greatly occupy public attention.—*Lond. Med. Record*, May 15, 1876.

10. *Erythroxylon Coca*.—Prof. BOUCHARDAT states that this article, introduced into France some years ago, has rendered most valuable service in therapeutics almost equal to that rendered by the cinchona bark. M. Bouchardat considers the coca as a stimulant to the nervous and muscular systems, and ranks it as such with tea and coffee. He terms it also a "substance d'épargne," or that which prevents the rapid waste of tissue, and thus enables the consumer to go a long time without food. The leaves are either masticated or made into an infusion, and used like tea with rum and sugar, or with sugar and milk. The leaf contains an essential oil, which is of an aromatic odour coupled with the flavour of the fresh plant. The slightly acid and bitter taste of the leaf may be attributed to the presence of tannin, and to an alkaloid somewhat analogous to atropine, and is termed "cocaine." An infusion made with the leaves is perfectly clear and of beautiful yellow. It has an agreeable odour, and like the leaf itself is slightly acid and bitter. Many of the French people use the infusion as a substitute for tea, to which the coca is preferred, owing to its being more stimulating, and at the same time less expensive. A "pharmacien," named Joseph Bain, was one of the first to introduce it into medicine in France, in the form of elixir and wine which are frequently prescribed in prolonged convalescence, and in cases accompanied with great prostration of strength.—*Brit. Med. Journ.*, April 15, 1876.

11. *Experiments on Ergot of Rye.*—Dr. G. LEVI concludes (*Lo Sperimentale*, Nos. 8 and 9, 1875) from experiments undertaken by him that it is to the phosphoric acid it contains that ergot of rye owes its properties.

After having shown the effect obtained in three bitches by the employment of medicinal phosphoric acid, he relates two observations made at the Maternity of Pisa by Dr. Garzella, on two women aged respectively twenty-five and twenty-eight years.

The following are the conclusions from the researches of Dr. Levi:—

(1) The therapeutic effects derived from ergot of rye are due to the phosphoric acid it contains.

(2) In the diseases in which the employment of ergot of rye is useful, the employment of phosphoric acid renders identical service.

(3) Phosphoric acid acts with equal intensity and rapidity with ergot of rye.

(4) The quantity of soluble phosphoric acid found in recently powdered ergot of rye is in proportion to the activity of the drug.—*British and Foreign Med.-Chir. Review*, April, 1876.

12. *Anæsthetic Action of Croton Chloral.*—M. CHOUPPE communicated to the Paris Biological Society (May 6, 1876) the result of his experiments on the anæsthetic effects of croton-chloral injected into the veins. Complete anæsthesia was produced by the injection of gr. j of this substance; to obtain a like result from chloral would require about gr. iij. The sleep was not accompanied by any cardiac disturbance, and the acceleration of respiration was temporary.

M. Trasbot mentioned that in experiments made at Alfort, small hemorrhagic spots were found in the lungs after the injection of anæsthetic agents, and in one case even death resulted from pulmonary hemorrhage.—*Le Progres Médicale*, May 13, 1876.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

13. *Inflammation.*—Dr. G. THIN has published in the *Edinburgh Med. Journ.* a series of papers on this subject, the drift of which he thus summarizes in his concluding paper in the No. for April last.

“My object has been to show that when a tissue is the seat of the changes which constitute the condition known as inflammation, these changes are divisible into two categories, the destructive and the reparative. The destructive changes consist, as regards the fibrillary tissue, in swelling, softening, chemical change, and disintegration; as regards the cellular elements, in division of the nuclei into small parts, swelling, death, and disintegration of the cell. The destructive change extends towards the bloodvessels, or directly implicates them; the weakened vessel permits the escape of the fluid and formed elements of the blood, and with the exhaustion or removal of the cause of the primary destruction, the process of repair begins by organization of the plasma and colourless blood cells. From the former, the ground substance (fibrillary tissue, etc.) is formed; from the latter, all the cellular elements, of what form soever. Flat cells, spindle and stellate cells, non-striped muscle cells, epithelial cells, all owe their origin to the lymph (or colourless blood) corpuscles. But the type of cell once established by the development of the original corpuscle, there is afterwards neither retrogression nor metamorphosis. The epithelial cell never again becomes or produces the colourless blood cell, nor the spindle cell develop into an epithelial cell. *Omnis cellula e cellulâ*, but not in the sense of new cells being begotten by the fixed cells of developed tissue. With the development of the free lymph cell of the fluids into a fixed element of the tissue, the power of reproduction is lost. So much, at least, I believe to be proven in regard to inflammation.

“The changes which cells undergo in this process have been erroneously asso-

ciated with the appearance of colourless blood cells in the spaces of the tissue. Between the one class of phenomena and the other, no direct relation had ever been proved, and the results of more rigid observation have shown that none exists."

14. *Arteriitis Obliterans*.—Under the above title, Dr. CARL FRIEDLÄNDER, Assistant in the Pathological Institute at Strasburg, has described in the *Centralblatt Med. Wiss.* (No. 4, 1876) what he states to be "an extremely common affection of the arterial system, which has, up to the present time, almost entirely escaped notice." It consists in the development of a connective tissue, very rich in cells, inside the innermost coat of the small and middle-sized arteries, which leads to contraction of the lumen of these vessels, and finally to its complete obliteration. The earliest stage of this affection consists in a growth of small, closely agglomerated cells between the innermost elastic lamellæ and the endothelium; later on, these cells increase in size, and a greater or less quantity of intercellular substance is formed, so that the tissue assumes the character of granulation tissue, and there may be, in addition, a development in it of new vessels. The new growth may either invade the whole periphery of the lumen or may project into the latter only from one side. It may preserve the character of granulation tissue for a long time, or else may develop into a tough and sometimes completely sclerotic connective tissue. The muscular coats may become completely replaced by connective tissue in some cases in which the vessels are involved, in such chronic inflammatory processes as are attended by much induration; for example, in the callous edges of ulcers and in chronic metritis. This "*arteriitis obliterans*" is rarely *primary* in its origin; it is found wherever there is acute inflammation in the tissues which the vessels supply, or else where granulation tissue is the result of chronic inflammation, or where this has passed on into induration, or finally into caseation. As a "physiological type" of this affection, Dr. Friedländer mentions the process by which the ductus arteriosus and the umbilical arteries become closed in the fœtus after birth, for this chiefly depends on a similar cell-growth in the intima.

Arteriitis obliterans, as a pathological process, plays a more or less prominent part in most chronic interstitial inflammations, but it is in the *lungs* that it assumes the greatest importance, especially as a link in that chain of phenomena which go under the name of phthisis. It exists not only in those vessels which are found lying free in cavities or in the immediate neighbourhood of ulcerating surfaces, but it is extremely frequent, in fact, almost constantly present, in the recent lobular and lobar inflammations which lead eventually to breaking down of the tissues of the lung. In animals in which affections analogous to phthisis have been produced experimentally (for instance, in rabbits in whom the inferior laryngeal nerves had been divided), *arteriitis obliterans* commences in the first day or two after the experiment. It seems, therefore, impossible to avoid the idea that the new growth must have a direct share in determining the malignant course of this disease, owing to the arterial anæmia which it produces in the affected tissues. This form of *arteriitis* also occurs in different kinds of tumours as well as in their immediate neighbourhood. It is habitually present in fibromata and in elephantiasis, and also in cancers in which the connective-tissue element predominates, especially scirrhus. It is probable that the cells of which the new growth consists in its earliest stage are, to a large extent, derived from wandering cells which have found their way into the intima from the vasa vasorum, but that they also take their origin from proliferated endothelial cells as well as from elements which have made their way between the endothelial cells out of the arterial blood. There is a very close resemblance between *arteriitis obliterans* and the processes which occur during the organization of thrombi. They differ only in their very first stages, and in their finished state it is impossible to distinguish one from the other, except by the pigment which remains as a mark of a previous thrombus, though this need not even necessarily be present. Dr. Friedländer has observed the occurrence in the veins of a process similar to that in the arteries, but it is much less common in them, and much more often complicated with thrombosis.

A process which corresponds very closely to Dr. Friedländer's *arteriitis ob-*

literations has been described by Dr. O. Heubner ("Dieluetische Erkrankung der Hirnarterien"; Leipzig, 1874), as being the essential feature in syphilitic disease of the cerebral arteries; and here it appears to be sometimes primary in character, although in the majority of cases it is dependent on meningitis or gummy tumours. The cell-growth, according to Heubner, lies immediately under the endothelium, and he believes that it originates chiefly from proliferation of the cells of the latter, and not, as Friedländer suggests, from wandering cells. He also describes the existence of long, spindle-shaped cells which form a thick network under the endothelium, and regards round cells as merely an accidental and not an essential element in the growth. The syphilitic arteriitis almost always attacks one side of the artery, whereas arteriitis obliterans generally involves the whole periphery of the lumen. In both cases, however, the final result is very similar, and the vessel involved either becomes obstructed owing to thrombosis, or totally obliterated by the contraction of the new connective-tissue.—*Med. Times and Gaz.*, May 20, 1876.

15. *Athrepsia*.—The number of the *Gazette Hebdomadaire* for April 7 contains a *résumé* of a course of lectures which Dr. PARROT has been delivering during the last two or three years, and which was reported in detail in the *Progrès Médical*.

By this term (α , and $\theta\rho\acute{\epsilon}\psi\iota\varsigma$ nourishment, from $\tau\rho\acute{\epsilon}\phi\omega$) Prof. Parrot wishes to indicate the affection of the digestive canal in young infants characterized by an excessive disturbance or destruction of the process of nutrition. The symptoms have been long known and often well described, but have not been hitherto regarded as constituting an affection having its own causes and special morbid process. It is to it that is due the fruitful mortality of nurse-children, and upon it that hygiene exerts so much influence. On the infant passing from the foetal state, although disturbances of nutrition are the principal cause of disease affecting it, this is not the only cause, for besides the infants that are born viable and under good conditions, and who may become the subjects of consecutive digestive disturbances from anti-hygienic and other causes, athrepsia will especially affect those who are born in a debilitated state, whether from being before their time or from imperfect formation. In such the respiration is found difficult, rare, or superficial, the pulse can be scarcely felt, and the sounds of the heart are only heard with difficulty. Everything which impedes nutrition is a predisposing cause of athrepsia. Thus, harelip or perforation of the palate impedes sucking, and coryza (an affection thought little of by the friends) may in this way prove fatal.

There are three stages to be observed in the disease. In the first the stools are observed to be frequent, liquid, yellow, or green; and these are followed by diminution of urine, thirst, restlessness, and loss of sleep. In the second period the stools acquire a repulsive smell, and there are first regurgitations and then vomiting, the appetite also diminishing. The child utters peculiar cries, and is emaciated, its facies being dejected, and its bodily heat sensibly diminished. Aphthæ accumulate in broad and thick plates on its tongue and fauces, adding another obstacle to digestion. In the third period the child passes into a hopeless state, the emaciation becoming excessive, and the stools more and more frequent and fetid. Although tormented by thirst, it is unable to suck or to swallow. The temperature continues to descend, the body remains immovable, and the limbs rigid; the abdomen in most cases is flattened, and the respiration gets slower and slower. The vomiting, which has been increasing in frequency, at this stage immediately follows ingestion.

With respect to the lesions produced, Prof. Parrot observes, first speaking of aphtha or *muguet*, which here plays so important a part, that it is the athrepsia which gives rise to the appearance of the parasite in the economy, the *muguet* being a mere incident, and never constituting the disease. But while we should not attribute to it the results due to the athrepsia itself, it is a painful complication, which by impeding sucking renders nutrition yet more difficult. While admitting that the presence of the germs of the parasite is indispensable, Prof. Parrot insists that these can never become developed unless the digestive canal and the buccal mucous membrane are in an altered

condition—thus making this dependent on athrepsia, instead of regarding, with Valleix, the *muquet* as the initial cause. Besides this there may be present ulcerations with loss of substance of the velum, and deposits which from their seat Prof. Parrot terms *plaques pterygoidiennes*, and which are almost as common as the *muquet* itself. The lesions of the skin that are observed are erythema, ulcerations, and pemphigus. The erythema, which is especially found about the buttocks and external genitals, Prof. Parrot believes, is caused by the diarrhoea, and disappears with it. The ulcerations are found generally in the heels and the internal malleoli, and sometimes along the edges of the feet. They occur only at the advanced period, and are of bad augury. The pemphigus is more rare than these two lesions, the athrepsia conferring upon it a cachectic appearance. The skin, too, in place of the normal red of the new-born infant, is of a livid yellow, and in some parts bluish, as around the mouth, the hands, etc. Induration also is a constant sign, the skin seeming uniform without any folds, and unable to be separated from subjacent parts. When this induration affects the face, the rigidity of the lips and of the buccal parietes renders suction and deglutition impossible—giving the child an appearance which has been mistaken by many observers for tetanus, and has been called erroneously trismus of new-born infants. The occurrence of coma and convulsions, sometimes of a complex epileptiform character, indicates the approach of death.

In speaking of the treatment, Dr. Parrot observes that athrepsia is a disease which may be induced in any child exposed to nosocomial influences and a deleterious diet, and our first care must be its nutrition and the choice of a nurse. Before allowing the child to suckle, we must give it six or eight times in the twenty-four hours a tablespoonful of a mixture consisting of three grammes (forty-five grains) of subnitrate of bismuth and 300 grammes of syrup of comfrey or syrup of quince. When the diarrhoea persists, a mixture of three grammes of bismuth, fifty of lime-water, and fifty of syrup of comfrey should be given; and if there is agitation, slight fever, and a foul tongue, from five to ten grammes of syrup of ipecacuanha may be administered. In the acute form of athrepsia, we must proceed with great energy, giving every ten minutes a teaspoonful alternately of two iced drinks—the one being prepared with 200 parts of sugared water and ten of old cognac, and the other consisting of beef-tea quite devoid of fat, slightly salted and diluted with equal parts of water. Three or four times a day the child should be placed for five minutes in a bath at 35° C. (95° Fahr.), to which has been added for every twenty-five litres of water forty or fifty grammes of flour of mustard. Nutritive enemata are of no use whatever.—*Med. Times and Gaz.*, May 27, 1876.

16. *Athetosis and Post-hemiplegic Disorders of Movement*.—Dr. W. R. GOWERS read a paper before the Royal Med. and Chirurg. Soc. (May 9th), the object of which was to describe two cases of disordered movement analogous to that to which Hammond has given the name of “athetosis,” and to consider the relations of that affection in a general survey of the various forms of unilateral motor disturbances. One of the cases had presented slow involuntary movements leading to various distortions of the hand, and a similar, although less striking, condition in the foot. The condition had supervened on a slight attack of hemiplegia. Under electrical treatment the spontaneous movements, after existing two years, ceased, only inco-ordination of voluntary movement remaining. In the other case the movements were slight, and only characteristic during extension. They had been preceded for some time by unilateral numbness. It was pointed out that neither the clinical history nor the supposed pathology of athetosis affords grounds for separating it from other forms of disordered movement commonly seen after hemiplegia, but any one of which may occur as a primary affection. The essential element in athetosis is a slow remitting mobile spasm, and it differs from the common post-hemiplegic contracture chiefly in the absence of fixed spasm. The varieties of quick intermitting spasm, regular and irregular, were then described, and its effect in producing inco-ordination, both choreiform and violent. In a case of extreme inco-ordination of the arm after hemiplegia, the post-mortem showed

a cicatricial induration, extending through the middle of the optic thalamus. There was no secondary degeneration of the spinal cord. In "late rigidity," it was pointed out, two elements may be discerned—one varying, ceasing during sleep, increased by an attempt at movement; the other unvarying. The latter only is to be referred to changes in cord and muscle; the former possesses many features in common with mobile spasm, and is probably to be referred to brain changes. Several illustrative cases were shown, and a table was exhibited, grouping the various disorders of movement under the three heads of "intermitting," "remitting," and "fixed" spasm.—*Med. Times and Gaz.*, May 27, 1876.

17. *Menière's Disease*.—Dr. DUFFIN communicated to the Clinical Society of London a case of this disease that he had observed for two years. Besides great degradation of hearing, the man was liable to paroxysms of subjective noises in the right ear, associated with fits of vertigo and a tendency to fall to the right. Skull-vibrations to a tuning-fork were almost, if not quite, absent on the affected side, although the whole range of the piano forte could be dimly followed. After eighteen months considerable amelioration set in; but the left ear then became somewhat involved, and the vertigo tended to throw him towards his left side. In one of his later fits, the patient for the first time lost consciousness, but without any other indication of epilepsy. Dr. Duffin remarked on the pathology of the vertigo, alluding to three fatal cases of injury to the labyrinth recorded by Knapp, and to Dr. Lockhart Clarke's researches on the cerebellar and vagus connections of the roots of the acoustic nerve. He also described the effect of pressure on the vagus of his patient, which was to throw the man into a faint, and to slow his heart during recovery. He then alluded to the functions of the cochlea, and the value of musical intervals in the appreciation of the duration of time. Lastly, he alluded to the prognostic value of skull vibrations in suspected disease of the labyrinth.

Dr. Hughlings Jackson said it was only during the last few years that he had known the pathology of these cases. He had of late been consulted by many persons, especially by medical men, for symptoms similar to those just described; they often would not believe the ear was affected, although troubled with noises in it. He believed the ear was affected, however, and in many different ways too; sometimes hemorrhage into the labyrinth would appear to be the cause of the symptoms. In some cases of paralysis of the portio dura, temporary giddiness had been observed at the onset, which was due, perhaps, to the sudden rigidity caused by the hemorrhage. Dr. Jackson thought the cochlea was concerned both in perceiving sounds and intervals; but he could not agree with the opinion that the cochlea, on account of its structure, perceived intervals only, any more than he could think the retina had the power of measuring space because extension was one of its qualities. As regarded the side to which the patient fell, he related the case of a gentleman shooting, who had put a large charge into his gun; the charge had exploded with a loud bang, and the gentleman was thenceforth deaf on the right side, and had always a tendency to go to the left in walking. In another case of injury to the head, the patient always reeled, and was giddy. Sometimes such patients were partially or quite deaf. In such case, the cerebellum might be diseased as well, but disease of the cerebellum did not produce deafness.

Mr. Dalby had noticed the very frequent occurrence of giddiness and tinnitus with deafness. He had divided the cases into two classes; one in which the patient was suddenly seized with giddiness, and was deaf, the giddiness then ceasing; the other in which giddiness first came on, and was followed by deafness and tinnitus, and the attacks of giddiness were subsequently repeated. He related particulars of certain cases of the former class. A physician had fallen in the road in an attack of vertigo, and, upon being taken home, was found to be deaf. A gentleman playing upon the piano had a sudden attack of giddiness; he first lost the power of hearing the high notes, and was always afterwards quite deaf. Other cases in which succeeding attacks occurred he believed to be much more frequent, though probably the lesion was in the same situation. In the cases in which giddiness came on in periodical and recurring

attacks, the patient would be conscious of a loud sound; but if the sound were higher and louder, the faculty of hearing would cease. But perfect deafness was not arrived at. In all cases he thought the labyrinth was involved.

Dr. Buzzard thought that more than one condition had been included under the title of Menière's disease. He had seen numerous cases in which there was a tripod of symptoms—tinnitus aurium, vertigo, and cranial neuralgia. In many of these, which, in other respects, resembled slight examples of the disorder they were considering, there was no deafness, but the neuralgic character was very marked. He had also seen several cases like Dr. Duffin's, and some of far greater severity; in one, the patient kept his bed for three months, unable to turn his head to the left; in another, there were constant vertigo and vomiting for six weeks. In all, however, the attacks, of whatever length, were paroxysmal, subject to recurrence, and combined with neuralgia of the fifth or occipital nerves. Granting the probable correctness of the physiological explanation of the cause of the vertigo, he thought that there must very frequently, indeed, be no structural lesion of the semicircular canals (the shortness and distinctly paroxysmal character of the outbreaks in many cases precluding this), and suggested that something like the "nerve-storm" of migraine swept the medulla oblongata, and produced in the auditory nerve a condition comparable with the neuralgia of a common sensory nerve, which displayed itself by these peculiar symptoms. In his cases Dr. Buzzard added, remedies useful in neuralgia, iron, and the local application of belladonna appeared to have been of service.

Dr. Ferrier remarked that the pathology of Menière's disease had had a new light thrown upon it, especially by the researches of Dr. Crum-Brown in this country, and Professor Mack in Vienna, and by the experiments of Goltz on the function of equilibration. The semicircular canals were an essential part of the mechanism by which equilibrium was maintained. Impressions were generated in the ampullary nerves, according to the direction in which the head was moved or rotated. Crum-Brown had shown that the canals of the two sides were so arranged in reference to the possible axis of rotation, that the ampulla at right angles to each axis received irritation, owing to inertia of the endolymph, contrary to the direction of the rotation. Hence, rotation to the right coincided with irritation of the left horizontal ampulla. Dr. Ferrier had endeavoured to show, in a paper which he had recently written on this subject (*West Riding Reports*, vol. v. 1876), how these facts were to be applied to the elucidation of the loss of equilibrium in Menière's disease. The direction in which equilibrium was overthrown was to the side opposite the seat of irritation of the ampullæ. Dr. Ferrier believed that Menière's disease was an irritative lesion, and that the way in which the patient fell depended on which canal was the seat of irritation. In Dr. Duffin's case there appeared to be an exception to the rule, that the patient fell to the side opposite, because his patient fell to the right, though the disease was apparently chiefly in the right ear. But this was a complicated case, for there was evidence of affection of both ears at the commencement; and, as afterwards proved, when the symptoms became clearly and definitely fixed in the right ear, the patient began to fall to the left.—*Brit. Med. Journal*, March 11, 1876.

18. *The Diagnosis of Empyema.*—A new method of distinguishing between different kinds of pleuritic effusions has lately been brought forward by Professor GUIDO BACCELLI, of Rome,¹ and promises to be a real addition to our diagnostic aids. We have hitherto been able to say whether there was fluid in the pleura or not, but the question of its serous or purulent nature has had to be answered by reference to a number of collateral circumstances, none of which by itself was conclusive, and which, as Professor Baccelli points out, may even fail collectively. We have decided that there was an empyema present when an effusion has remained long unabsorbed, while at the same time

¹ "Sulla Trasmissione dei Suoni attraverso i Liquidi Endopleurici di Differente Natura," di Guido Baccelli, Professore di Clinica Medica nella R. Università di Roma.—(*Archivio de Medicina Chirurgia ed Igiene*, 1875, Dispensa vii. e viii.)

the fever kept up, and the patient gradually lost flesh and strength, and perhaps suffered from œdema of the extremities. By the new method, which is quite simple, we are at once able to determine whether the exudation is serous or purulent. It is founded on a physical law—namely, that the vibrations of sound in liquids are transmitted *inversely* to their density. In a serous fluid, therefore, the sound passes more readily than in a purulent; and it is found that, whereas the whispered voice (*la parola aforcicamente sillabata*) can be heard clearly,¹ accompanied with bronchial expiration, at the base of a serous effusion, the spoken voice is not transmitted nor bronchial breathing heard over a purulent exudation. To use the method accurately, two conditions must be complied with: (1.) The ear of the auscultator, which is not applied to the chest, must be withdrawn from all external sounds by closure with the finger, and the ear must be firmly pressed naked against the chest, unassisted by a stethoscope. (2.) The patient must be placed in such a position that when he speaks the bundle (*fascio*) of oral vibrations shall issue in a direction diametrically opposed to the ear of the listener. This condition is attained, supposing that the right lung is being auscultated behind, “by turning the patient’s head so much to the left that, by drawing an imaginary line from his mouth to the point in the thorax where the ear is applied (on the posterior paraxillary line), it passes diagonally downwards through the centre of the effusion.” Besides distinguishing between a simple serous effusion and a purulent effusion, this method enables the existence of a mixed effusion to be detected—*i.e.*, of a serous exudation, in which flakes of fibrine and a moderate amount of leucocytes are contained,—since the latter, by their subsidence to the lower part of the thorax, prevent the passage of the whispered voice over the area which they occupy.

The following case, which is one of several which Professor Baccelli details, will illustrate the application of this principle in practice: “Santi D., aged twenty years, a peasant, was admitted with symptoms of pleuritic effusion filling his whole left chest. Here the whispered voice was transmitted clearly over the anterior surface of the thorax along the paramammary line as low as the fifth intercostal space. The right border of the heart was under the right nipple, and would be indicated by a line descending obliquely from the second piece of the sternum. The actual displacement amounted to seventeen centimetres measured horizontally. As far as the edge of the eighth rib the whispered voice was transmitted distinctly. Over the left lateral (axillary) region it was heard clearly to the sixth rib; indistinctly to the eighth. Over the left back the whispered voice was transmitted clearly from above downwards as far as to two centimetres above the angle of the scapula, and indistinctly for five centimetres lower still. The diagnosis founded on the physical signs was ‘an exudation of moderate density containing fibrine, albumen, and leucocytes.’ Paracentesis was performed, and one litre and a half of serum, in which floated some flakes of serum, and which contained a moderate amount of leucocytes, was withdrawn.” The simplicity of this new method will insure for it, we feel confident, general acceptance. Professor Baccelli’s reputation is sufficiently high in Italy to render his suggestions worthy of our best consideration in this country, and we shall hope before long to hear of cases to which his method has been successfully applied by English physicians.—*Med. Times and Gaz.*, March 18, 1876.

19. *Imperfect Mastication as a Cause of Diarrhœa.*—Dr. A. W. Edis calls attention (*The Practitioner*, April, 1876) to what he justly considers a frequent cause of diarrhœa, *viz.*, deficient mastication from defective or decayed teeth. It is also most certainly a very frequent cause of dyspepsia in various forms, and the only mode of relief for these ailments is by having adjusted properly in the mouth artificial teeth to assist in mastication.

¹ Professor Baccelli makes his patients say the words, “trenta-trè,” pronounced “tren-tah-tray;” but probably “ninety-nine” would do as well.

20. *Blisters for the Cure of Diphtheritic Paralysis.*—Dr. W. F. WADE, Physician to the General Hospital, Birmingham, in an address delivered before the Birmingham and Midland Counties Branch of the British Medical Association, which contains many valuable practical suggestions, relates some striking cases, illustrative of the efficacy of blisters in diphtheritic paralysis. He says: "I saw, a good many years ago, a lad who, from paralysis of the muscles of the throat, could swallow nothing, and a part at least of what he did try to swallow got into his lungs. At least, there was a loose mucous rattle over the back of the chest, which seemed probably due to this cause. His debility and emaciation were extreme, and he died a few days afterwards.

"Last year, I saw just a similar case in a young girl. In an attempt to swallow a little water in my presence, I thought she would have been choked. The voice was almost extinct; the arms and legs almost powerless and terribly wasted. She was dying of inanition; and, with the former case before me, it seemed almost a certainty that, unassisted, she could not live more than two or three days at the outside. Even when it gets well, diphtheritic paralysis generally, if at all severe, takes a long time—weeks or months—to do so. Nutritive enemata are a poor resource under such circumstances. Reflection on the former case had led me to the conviction that the only real prospect of recovery in a similar one would lie in frequent feeding through an œsophageal tube. My colleague said it would be impossible for him to undertake the passage of this sufficiently frequently. He asked me to take her into the hospital, and I readily assented; for, although considerably above the ordinary rank of hospital patients, the circumstances of her case made her eminently proper for admission. The parents, however, foolishly fond, absolutely refused the proposition, and urged me to do something for her at home. After many most earnest endeavours, we failed to move them. But what to do! I protest I could not at the moment have felt much more helpless had the undertaking been the bringing of the dead to life; the more so, that we know nothing of the pathology of this paralysis. In what part of the nervous system changes have occurred, what is the nature of these changes, are matters upon which our ignorance is absolute. One thing was vividly before my mind: the necessity that whatever agent we employed should be one capable of acting speedily. I happened to recollect that in the last century it was the custom to treat some affections of the throat with blisters to the back of the neck; indeed, they were used in diphtheria itself, but only in its early stages, not in the subsequent paralysis. I had myself seen curious and speedy results in some throat-inflammations from blistering the nape. Whatever effect blisters produce is generally soon after their application. Upon grounds so slender, and for reasons so trivial, that in any ordinary case it would be a disgrace to act upon them, we resolved to apply a blister to the nape. I saw her no more; but some time afterwards I learned that within thirty-six hours she was able to swallow. She made a good recovery, though the paralysis of the arms and legs took their usual long time to disappear.

"In the beginning of this year, a man was admitted into the General Hospital under my care suffering from diphtheritic paraplegia. With a person holding him on each side, he could just shuffle along the ward to his bed. I put a blister about an inch and a half wide the whole length of the back, by the side of the vertebræ. It ought to have been stated that his arms were considerably paralyzed, as well as his legs. In a day or two, he could walk to the lobby without assistance. A second blister on the other side of the spine cured him.

"Shortly after this, a woman from the country was carried into the outpatient room, being unable to put one foot before the other. Dr. Carter diagnosed diphtheritic paralysis, and blistered the back. That day week, she walked from the station to the hospital and back. Since then, I have seen a patient who, after some acute throat-affection, was supposed to have stricture of the œsophagus, to relieve which a bougie had been repeatedly passed. I have seen this mistake made before. The total insensibility of the fauces made it probable that there was paralysis of the throat, and she too was very speedily relieved by blistering. It is now all but five years since I saw a lady who had then been suffering for some time, I think a good many months, from diphthe-

ritic paralysis, especially affecting the legs. She got no better, and subsequently was seen by two very eminent metropolitan physicians, who confirmed the diagnosis, but failed to effect a cure. In the course of this summer, her case recurred to my mind, and having ascertained from her medical attendant that she remained in the same state, viz., able only to crawl a few yards with great difficulty, I advised him to try the effect of a blister or two. As might be expected, after so long a time, the effect was less speedy, but a few weeks after she was able to walk very much better. At this time, she was so shocked and overwhelmed by a domestic calamity that the treatment could not be repeated, and the case remains inconclusive, though not without its significance. Diphtheritic paralysis shifts its seat, and may, indeed, disappear unexpectedly in some cases, though I have personally seen less of this fugitiveness than some other writers appear to have done. The doctrine of probabilities forbids us, I fancy, to thus explain away the curious, if not very extended, series of cases above given."—*Brit. Med. Journ.*, October 16, 1875.

21. *Arrest of Convulsions by the Sinistro-lateral Posture.*—Dr. F. J. BROWN states (*The Practitioner*, April, 1876) that he has seen two cases of convulsions arrested almost instantly by turning the patient over on the left side, a procedure which he adopted from experience of its good effects both during chloroform inhalation and subsequently in the stage of recovery from the anæsthetic, as first employed by Mr. Bader.

Dr. Brown states that "a few months since a man suffering from Bright's disease was seized with uræmic convulsions in my presence. I turned him upon his left side and the convulsions ceased instantly.

"Recently a man, aged 56 years, in impaired health from chronic catarrh, was seized with unilateral (right) convulsions. His consciousness and power of speech were intact. He had been convulsed for ten minutes when I entered the house, and he was growing worse. I turned him over upon his left side, and the convulsions ceased in about ten or fifteen seconds. He had experienced a similar seizure on Dec. 9, 1875.

"I hasten to report these cases, for I am certain that marvellous results will be obtained in convulsive diseases (possibly even in epilepsy) by sinistro-lateral posture."

22. *Chloral Enemata in Infantile Convulsions.*—Dr. POLAILLON stated at the Paris Medical Society that, encouraged by the benefit he had derived from chloral in puerperal convulsions, he had in two cases administered it with success to children as an enema (three grains in five drachms of water). Calm sleep and a cessation of the convulsions followed, and a similar enema given twenty-four hours later completed the cure. M. de St. Germain believed chloral an eminently useful remedy in convulsive diseases, and related a case in which he had given it by the mouth to a child fourteen years old, the subject of tetanus, in doses increasing from three to twelve grammes per diem, the patient recovering on the seventeenth day. M. Blondeau had, with Trousseau, kept a child ten years of age under the influence of chloroform for twelve hours with success. M. Lolliot also prefers chloroform, and had kept a child three months of age under its influence during twenty-four hours. M. Lunier, in a case in which bromide of potassium had been without effect, found that chloral arrested both the convulsions and the accompanying fever. He thinks that, carefully employed, it is preferable to chloroform, but that we must be cautious in giving large doses.—*Med. Times and Gaz.*, April 22, from *L'Union Méd.*, March 23.

23. *Jaborandi in Pleuritic Effusions.*—On the strength of five cases, Dr. GRASSET, of Montpellier, comes to the following conclusions: 1. Jaborandi is very useful in the treatment of pleuritic effusions, whatever may be their date and the amount of the fluid. 2. It usually causes a rapid disappearance of the liquid, and the production of the pleural friction-sounds. 3. The effects of the jaborandi are of short duration, so that the liquid is often reproduced with great rapidity: it must then be persevered with, and usually the definitive dis-

appearance of the liquid will be obtained. 4. But when this disappearance has been attained, and the pleural friction-sounds appear, the jaborandi becomes entirely inefficacious. In order to complete the cure we should usually then have recourse to a tonic treatment, and sometimes to local applications—as, e. g., to the tincture of iodine.—*Med. Times and Gaz.*, May 6, 1876, from *Journ. de Thérapeutique*, April 10.

24. *Injection of Quinine in Gonorrhœa.*—RADHA NAUTH ROY, Assist. Surg., extols (*Indian Med. Gazette*, May, 1876) the efficacy of injections of quinia in gonorrhœa. He states: “I was once tempted to try it in a case of acute gonorrhœa, where scalding was unbearable, and discharge profuse, and to my utter surprise after the third day, I found the man quite relieved. He described to me the soothing effect of the injection as something cold like ice. The discharge was so much diminished that his clothes were scarcely stained after the third day. There was no more incessant desire to void the bladder, and he was to all appearance comfortable. My success in this case made me bold enough to use it in other cases, and I have invariably found the disease yield both in its acute and chronic stage under its influence. It acts as a tonic and astringent to the mucous membrane of the urethra. I have also used it in some cases of cystitis with much benefit. I generally use it dissolved in sulphuric acid dil. mixed with rose-water. Two grains of quinine sulph. dissolved in acid. sulph. dil. ℥viii or ℥ix, and mixed with an ounce of rose-water—to be used twice for injection. At the same time I give copaiba mixture to my patients. In almost all the cases I have found it act like a charm. The disease is generally cured within a week, but chronic cases take a longer time. In a few acute cases it took more than a fortnight, but the delay in them was attributable to their irregular habits during the treatment.”

25. *The Kava as a Cure for Blenorrhagia.*—Dr. DUPOUY, a physician in the French Navy, states that the kava (*Piper methysticum*, a plant of the family *Piperacea*, a native of Oceanica) is an energetic diuretic, and rapidly arrests the gonorrhœal discharge. Dr. D. made this discovery by accident. His ship having been wrecked, he was left without any medicine, and his patients with blenorrhagia could not be treated. The sailors having obtained some kava they mixed it with their water so as to obtain a more agreeable drink. Dr. D. after some days was struck with the great improvement of his venereal patients. The pains of micturition had ceased, the discharge diminished and soon ceased, and after from ten to twelve days the gonorrhœa was cured. The kava was afterwards administered in a great number of cases with equally good results. The kava was prepared, cutting in pieces four or five grammes or more of the dried root, and macerating it for five minutes in 1000 grammes of water. The water was then filtered and given in two doses before or after meals.—*Gaz. Hebdom.*, March 31, from *Journal de Thérapeutique*, 25 Feb. 1876.

26. *Tapping the Gall-bladder.*—Dr. E. L. DIXON relates (*The Practitioner*, April, 1876) a case in which the gall-bladder was tapped five times, not merely with impunity but with great relief to the patient, and a total of 87½ oz. of liquid withdrawn by the aspirator. The patient was jaundiced, her gall-bladder enormously distended, the common bile duct occluded by malignant deposit. The life of the patient seemed to have been protracted by the operation, but, as might have been expected, a fatal result was not prevented.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

27. *Behaviour of Carbolized Catgut inserted among Living Tissues.*—Mr. WM. J. FLEMING has instituted a number of experiments for the purpose of ascertaining what becomes of carbolized catgut introduced among living tissues.

After trying various experiments with unsatisfactory results he adopted the following plan: "Having then taken a piece of carefully prepared thick catgut, about six inches long, and attached the silk over about an inch and a half in the centre, I thread the gut into a sharp aneurism needle, push it well into the tissues, and bring the point out, say three inches, from the place of puncture. The gut is caught, the needle freed and withdrawn, and the part of the catgut bearing the silk being adjusted so as to occupy the middle of the track, the ends are cut short, and by putting the skin on the stretch they slip below it, thus making the whole piece subcutaneous. Of course the needle, surface of skin, etc., are previously rendered antiseptic.

"In this manner, then, I have performed about twenty experiments upon dogs and rabbits, latterly with the addition that I killed the animal by bleeding, and injected the abdominal aorta with two per cent. Bruke's soluble Prussian blue. I then cut out the pieces of catgut with some of the tissue in which they were imbedded, hardened them in spirit, or froze them, and made sections in the usual way.

"The results of these experiments show that a gradual softening takes place from without in, the catgut breaking down and becoming infiltrated with cells, probably leucocytes. This part of the process takes from five days to about twenty, varying with the specimen of catgut, the tissue amongst which it is situated, and the age and vitality of the animal. Next the pulaceous mass into which it has been converted begins to metamorphose, and is soon permeated with blood channels, and ultimately may be described as a cast of the catgut, in a kind of granulation tissue freely supplied with bloodvessels, which in many of my sections are very fully injected.

"If, then, we admit these conclusions, we can easily account for the different results obtained by the use of catgut in different hands. We see that it is in reality merely a temporary ligature, because when in the softened stage we cannot consider it to have any constricting effect.

"Whether, then, this temporary condition lasts long enough to produce embolic occlusion of the vessels depends upon the sample of catgut and the vitality of the patient.

"In conclusion, my experiments seem to demonstrate that an aseptic, dead, foreign, animal body may under appropriate conditions become, by a process of softening, absorption, and re-deposition, changed into or replaced by a living, vascular, and comparatively highly organized, animal structure."—*Lancet*, May 27, 1876.

28. *Treatment of Severe Sprains*.—Dr. SAMPSON GAMGEE, Surg. to Queen's Hospital, Birmingham, expresses his disapproval of the orthodox treatment of these injuries by leeches and fomentations, and recommends (*Lancet*, April 29) instead, circular compression and perfect immobilization. He related the following case as evidence of the efficacy of the latter mode of treatment. An elderly gentleman had recently sprained his right ankle in going over a ploughed field. As he had a policy in one of the accidental insurance companies, its medical officer saw the case, and he advised an incision to give vent to matter, which he thought had formed in the centre of the swelling. In this advice he was sustained by a hospital surgeon, who was additionally called in on behalf of the company. Mr. Clay, dissenting, invited my attendance. I found the right ankle hot and exquisitely painful. It was so much swollen that its circumference over the heel exceeded that of the corresponding sound joint by nearly an inch and a half. The skin on the outer side of the ankle was especially hot, red, tense, and shining; palpation in this situation communicated a feeling of elasticity closely simulating, but not amounting to, fluctuation. With Mr. Clay's concurrence and assistance I enveloped the limb from the toes to the knee in fine cotton-wool, applied well-moulded pasteboard splints on each side, bandaged with methodically uniform compression, and starched the outside. A second consultation was held in the course of three days, when I found the patient very much easier. He had had a good night's rest and had been able to turn over in bed, and could bear the limb lifted and put down again without pain. On opening the apparatus in front I found the swelling had

considerably decreased; the previously red skin was yellowish and shrivelled like the skin of a late russet apple, not looking, as at my first visit, like the red shining skin of a prime Blenheim. That shrivelled look is always a good sign. I pared the edges of the case, and readjusted with firm pressure. Three days later more shrinking was met by fresh paring, and still firmer bandaging. At a consultation held a fortnight after the first, the patient was perfectly easy. No one thought any more about puncturing in search of matter. The insurance company compromised the affair by paying down a substantial sum of money, and I replaced the pasteboard apparatus by strapping the joint with emplastrum elemi spread on leather, and a Churton's bandage applied with smooth firmness. When I last saw the patient with Mr. Clay, he was walking about his garden with a stick; the plaster had been very properly removed, and the swelling had subsided, the only difficulty to locomotion being stiffness of the joint. I cracked the adhesions by using the requisite amount of well-applied force, and we concurred in advising free use of the joint. In a note which I received from my colleague seven weeks after our first consultation, he wrote: "Our patient is progressing very satisfactorily; he comes to business every day, walks about a good deal, and does not require surgical supervision."

The case is a typical illustration of the proposition that severe sprains require immediate compression and absolute immobilization.

29. *Treatment of Varicose Ulcers by the Tartrate of Iron and Potass.*—Dr. BOURGUIGNON, having derived so much advantage from this substance in the treatment of phagedænic chancre, as recommended by Ricord, was induced to extend its application to chronic wounds in general, and especially to varicose ulcers of the leg with hard, well-defined edges and unhealthy surfaces. For the last ten years he has found these obstinate cases readily yield to this treatment, so as to become cured in two or three months. A solution of from two to six parts of the tartrate (according to the sensibility of the ulcer) is to be made in 100 of pure distilled water, a few drops of ammonia being added to prevent any precipitation. Pledgets of very fine charpie are to be soaked in it, and applied to the ulcer night and morning, and covered over with a thick layer of cerate, which must be so removed, with the aid of tepid water, as to leave none of the charpie sticking in the ulcer. After cicatrization has commenced, the lotion may be applied only in the evening, simple cerate being substituted in the morning. If the application is painful at first, opiate cerate may for a while be employed alternately.—*Med. Times and Gaz.*, April 22, from *L'Union Méd.*, March 30, 1876.

30. *Boracic Acid as an Ordinary Dressing for Wounds.*—Dr. LEONARD CANE extols (*Lancet*, May 20, 1876) boracic acid as a dressing for wounds. Its advantages, he states, are: "1st. It is an *antiseptic which does not irritate and inflame*, and so allows the natural processes of healing to go on without much interruption.

"2d. It is exceedingly *simple* in its application, and can be used apart from all the details required by a thoroughly antiseptic method.

"3d. It can be used in the shape of the lint, lotion, cotton-wool, etc., in combination with most other methods of treatment.

"4th. Its *cost is trifling*; and though this is of secondary importance, it is a feature of the treatment which will recommend its employment in workhouse infirmaries and in dispensary and parish practice."

31. *Fractures of the Costal Cartilages.*—Dr. E. H. BENNETT Prof. Surg. in the Univ. Dublin, in an instructive paper on this subject (*Dublin Journ. Med. Sci.*, March, 1876), records six cases of this infrequent accident, which have come under his observation. He points out the circumstances under which these fractures take place, and gives the details of the microscopic examinations of the specimens he describes.

He draws the following conclusions from his study of the subject:—

1. That fractures of the costal cartilages may be arranged in three groups—the first containing recent fractures, which are consequences of grave injuries of

the chest, and mere results of fractures of the sternum or ribs; the second, united fractures caused by limited direct violence; the third, fractures the result of muscular action.

2. That the degeneration of the cartilages which precedes their ossification—the cleavage of the hyaline substance—may be regarded not only as a cause predisposing to fracture, but also as a cause determining its direction, which, in the great majority of cases, is transverse.

3. That oblique fractures are possible, chiefly as secondary injuries.

4. That the callus in these fractures is developed as in bone, the broken cartilage participating in its development.

5. That the difference between the modes of union in bone and cartilage fractures consists, in the case of overlapping fractures, in the more limited development of callus in the cartilage fractures, and, in all forms of fracture, in the slowness with which the process of union would appear to be completed.

32. *Aneurism involving the Innominate, First Part of the Subclavian, as well as Part of the Arch of the Aorta.*—A patient of Mr. SPENCE, who had suffered from this trouble, was exhibited (April 5) to the Medico-Chirurgical Society of Edinburgh. Before anything in the way of operation was attempted, rest was tried, and half-drachm doses of iodide of potash were given four times a day. This treatment proved successful, so that there was new consolidation and absence of all pulsation.—*Ed. Med. Journ.*, May, 1876.

33. *Results of the Cautery in the Treatment of the Pedicle in Ovariectomy.*—Dr. THOMAS KEITH states (*Lancet*, April 15, 1876) that he has now used the cautery fifty times (in 216 operations) in the division of the pedicle. The results show 92 per cent. of recoveries, and are the best he has had. "This," he says, "is not a large mortality. That it ought to be lower I am certain; and, while admitting that it may in this instance be partly accidental, the numbers are sufficient to prove that the method of dividing the pedicle by the actual cautery, as introduced by the late Mr. Baker Brown, is a good method, and one which has had scant justice done to it since his death.

"I hope soon to give all the cases in detail, so that each one interested in the matter may judge for himself as to the value of this way of dealing with the pedicle."

34. *Ligature of the Subclavian Artery successfully performed in a Case of Wound of the Axillary Artery.*—Dr. CLAUDON communicated to the Surgical Society of Paris, March 8th, an interesting case of this. In the discussion which arose M. LE FORT maintained that in cases of wound of the axillary artery the ligature of the subclavian was preferable to ligature of the vessel in the wound. On a view of all the cases on record, M. Le Fort has come to the conclusion that the ligature of the axillary artery in the wound is almost invariably followed by gangrene of the limb, while ligature of the subclavian in a considerable number of cases results in a cure. He attributes the fatal results of the ligature of the axillary artery in the wound to the circumstance that it requires the surgeon to open the armpit, and, consequently, to divide the anastomosing arteries, and thus to compromise the collateral circulation, whence consecutive gangrene of the limb results.—*L'Union Médicale*, April 20, 1876.

35. *Successful Disarticulation of the Shoulder for a Sub-periosteal Sarcoma of the Upper Extremity of the Humerus in a Pregnant Woman.*—M. NICAISE communicated to the Paris Surgical Society, 8th March, a report of a case of this operated on by him in the Municipal *Maison de Sante*, which excited great interest from the fact that the woman had arrived at the 8th month of pregnancy. The patient recovered, and thirty-six days after the operation, which was the normal term of gestation, she was safely delivered.—*L'Union, Médicale*, April 20, 1876.

36. *Gastrotomy for the Removal of a Fork.*—On the 30th of March, 1874, a man æt. 18 years imitating the feats of a juggler, allowed a fork which he was pretending to swallow, to pass deep into the pharynx. During attempts made to extract it, it slipped into the stomach. At first he suffered no pain, but after a fortnight he was seized with violent pains in the stomach, which ceased after twenty-four hours. From this time he alternated between complete ease and a moderate amount of suffering. In November, 1875, he consulted M. LABBÉ, who thought well of an operation, and M. Gosselin and Baron Larrey also sanctioned it. Caustics were employed as a preliminary, in the hope of producing adhesions extending from the exterior inwards, but when the operation was resorted to on April 9 (*i. e.*, rather more than two years after the accident), these were found entirely absent.—*Gaz. Hebdom.*, May 5, 1876.

Mr. L. made an incision of four centimetres, commencing from a centimetre on the inner side of the false ribs, and parallel with them, its inferior extremity falling on a transverse line passing through the cartilages of the two ninth ribs. In this way the anterior surface of the stomach was reached at the junction of its cardiac and pyloric portions. Forcepressure was employed to keep the wound clear of blood. On the stomach being exposed, before any incision was made into it, it was attached by eight points of suture, passed by highly curved needles, to the abdominal parietes at a distance of a centimetre from the circumference of the external wound. On the incision into the stomach being made, the fork was readily felt at several centimetres from the left extremity of the incision; and it was found that the extraction could not be easily made, inasmuch as the finger was grasped by the aperture of the stomach as by a vice. When, however, the mucous membrane had been everted and fixed along the whole circumference of the stomachal wound, all difficulty ceased, and the fork was seized by a long polypus-forceps with curved extremity, detached from amidst a mass of "fungous tissue" which surrounded it, and made to project through the wound. Some threatenings of peritonitis were averted by the application of collodion to the abdomen, and under the use of iced champagne the patient's strength soon became re-established. On the fifth day he began to take solid food, and gradually resumed his ordinary diet. All but two of the sutures have come away, and the aperture is reduced to a fistula that scarcely admits the little finger. In conclusion, M. Labbé remarks:—

"The successful termination of the operation seems to me to be due to several conditions. I attribute it to the operative procedure adopted, founded on very exact knowledge of the "landmarks;" to the precaution I took of fixing the stomach to the abdominal parietes before opening it; and to the consecutive treatment, especially the employment of so thick a layer of collodion as to render the walls of the abdomen and the digestive tube itself immovable, while submitting them to a very firm compression. By means of this compression the character of the respiration was very decidedly modified, the diaphragmatic having been converted into an upper costal respiration."

[A somewhat similar case occurred in this country seventy years ago, and was successfully operated on by Dr. SAMUEL WHITE of the city of Hudson, N. Y., who published on account of it in the *Medical Repository*, vol. iv., Second Hexade, p. 367 *et seq.*

"The subject of the case was a man æt. 26 years, who on the 7th of July, 1806, procured," says Dr. White, "a full-sized teaspoon with some fruit and jelly, and, impracticable as it may appear, forced it down his throat, while his attendant was gone, by his request, to the opposite side of the room for water. His struggles were violent, and he apparently suffocating, when, by the force of his fingers against the handle of the spoon, he crowded it so far as to suffer it to pass into the stomach before his friends could be gained to give his attendant assistance.

"In this deplorable situation I was immediately requested to visit him. He was greatly agitated—talked much—believed he had gained his point, and declared that no attempt of ours could rescue him; which, at the time, I considered too true. The morning following he had some irregular sleep, continued through the 8th under a slight delirium, and complained of no uneasiness of the stomach. 9th. Continued the same until evening, when a spasmodic

affection of the stomach alternated every fifteen minutes with a stupor; throwing himself, as often as the spasm returned, with great violence from one side to the other, for about two hours (while the spoon probably passed the pylorus), when he suddenly fell asleep, and rested well through the night, extending the diseased leg, the flexor tendons of which had been greatly contracted, especially through the last complaint. He now became rational, his fever formed a perfect crisis; he recounted the past transaction with extreme sensibility, and expressed great anxiety for relief.

"On the 25th a cutting sensation, confirmed by pressure of the hand, when in a stooping position, led to a discovery of the situation of the spoon in one of the last circumvolutions of the *intestinum ilium*, near the line dividing the right iliac and hypogastric regions. It remained in this fixed position, with increased heat and irritation in the adjacent parts, till August 7th.

"Fearing that any further delay might endanger success, and he being resolutely determined to suffer everything for relief, accompanied by the consulting physician, I had recourse to an operation as the *dernier ressort*. I made an incision of about three inches, parallel with the epigastric artery, extending upwards to near a transverse line with the top of the *os ilium*—penetrating the inner edges of the obliquus externus descendens, internus ascendens, and transversalis abdominis—opened the peritoneum with a lancet, protruded the lower turn of the intestines containing the handle of the spoon, with my forefinger; pierced the intestine with the lancet over the end of the handle, and extracted it in the same direction with the forceps. I then laid the divided edges of the intestine directly opposite, and secured them with the glover's stitch—dressing the external wound with slips of adhesive plaster and lint.

"After this I made use of simple dressings to the wound; applied a liniment composed of camphorated oil, volatile spirits of ammonia, and laudanum, equal parts, to the diseased joint and limb, which became more painful and contracted while labouring under the irritation of the spoon. Under this treatment, his wound healed by the first intention."]

37. *New Operation for the Obliteration of Depressed Cicatrices after Glandular Abscesses, or Exfoliation of Bone.*—MR. WILLIAM ADAMS, surgeon to the Great Northern Hospital, etc., recommends (*British Med. Journ.*, April 29) for the removal or obliteration of deeply depressed cicatrices, such as result from glandular abscesses of the neck or from disease of bone in any region, a new operation, which consists: 1. In subcutaneously dividing all the deep adhesions of the cicatrix by a tenotomy knife, introduced a little beyond the margin of the cicatrix, and carried down to its base; 2. In carefully and thoroughly everting the depressed cicatrix—turning it, as it were, inside out, so that the cicatricial tissue remains prominently raised; 3. In passing two hare-lip pins, or finer needles, through the base, at right angles to each other, so as to maintain the cicatrix in its everted and raised form for three days; 4. In removing the needles on the third day, and allowing the cicatricial tissue—now somewhat swollen, succulent, and infiltrated—gradually to fall down to the proper level of the surrounding skin.

He relates three cases in which he resorted to this operation, and gives illustrations of the cases before and after the operation, which show considerable improvement in the appearance of the patient.

"After the operation," he says, "the cicatricial tissue always loses its shiny, membranous, and vascular characters; it becomes thickened, and of an opaque white colour. The thickening of the cicatricial tissue results from its succulent condition during the three days it remains elevated by the pins, and the inflammatory infiltration at its base.

"The permanency of the operation is placed beyond all doubt by the last two cases described—one nine and the other nearly three years since the operation; and the completeness of the obliteration of the depression and the improvement of the cicatricial tissue, has surpassed my most sanguine expectations."

38. *Cyst of the Kidney mistaken for an Ovarian Cyst ; Extirpation of the Kidney ; Recovery.*—The following case is recorded in the *Gaz. Méd.*, No. 6, 1876, from the *Giorn. Med. di Torino*, July, 1875 : A widow, forty years old, entered the hospital November 15, 1873 ; she had had five children, the last three years before, and two abortions, one after her second child, the other after the fourth. Eighteen months ago she first noticed a tumefaction in the left iliac fossa. This tumefaction continued to increase, especially during the two months previous to admission. The patient was very feeble ; her temperature normal, respiration easy ; no albumen in urine. The tumour, movable in all directions, occupied the left iliac region and a portion of the hypogastric and right iliac regions ; there was fluctuation at three points on the anterior surface of the tumour, uterus very high. Ovariectomy was performed December 2d. The cyst, having been evacuated by puncture, was found to be attached by its posterior surface. On examination of the abdominal cavity, the two ovaries were found to be normal and in their position, and the cyst to arise from the inferior extremity of the left kidney. It was decided to remove both the cyst and the kidney. The intestinal coils adhering to the posterior wall of the cyst were detached with the fingers, the left ureter and the vessels were tied, and the kidney and cyst were extirpated entire. No hemorrhage, properly speaking, but much oozing. Operation concluded as usual. The cyst was formed by the inferior quarter of the kidney, which was otherwise healthy. On April 7, 1874, the patient had recovered almost completely ; urine was always secreted in abundance, and never contained albumen.—*New York Med. Journ.*, June, 1875.

39. *Complete Extirpation of the Larynx.*—Another case in which the larynx was completely removed by operation is reported by Prof. MAAS, of Breslau (*Langenbeck's Archiv*, xix. 3, 1876). The first signs of trouble in the larynx showed themselves at the end of September, 1873. By the middle of the following April, the patient, a man of 57, suffered so much from the stricture of the larynx caused by the large and growing tumour, that tracheotomy was performed by Dr. O. Riegner. By the first of June, however, the tumour came to press so much upon the œsophagus that it was impossible for the patient to swallow the smallest portion of fluid. The operation of extirpation of the larynx was therefore performed by Prof. Maas, who found great advantage in adapting a modification of Rose's position, with the head hanging backwards. After the operation the patient found the frequent introduction of the œsophageal tube so painful that Prof. M., on the third day, passed an India-rubber tube through the wound, down nearly to the cardiac end of the œsophagus, and left it in that position. Through this the nutrition of the patient was satisfactorily carried on. On the ninth day he was able to leave his bed ; on the eleventh an unsuccessful attempt was made to introduce an artificial larynx ; on the twelfth the bronchitis, from which he had suffered since the tracheotomy, became seriously worse, and on the fourteenth day he died of pneumonia. The microscope determined that the tumour which involved the whole larynx was adeno-fibroma carcinomatosum.—*Med. Record*, April 22, 1876.

40. *Resection of the Larynx.*—Prof. C. HEINE, of Prague (*Langenbeck's Archiv*, xix. 3, 1876), reports a case which he diagnosticated as concentric hyperchondrosis of the larynx, and which resulted in almost complete obliteration of the cavity of that organ. Tracheotomy had been performed, with temporary relief, also a subsequent dilatation of fistula ; but the case became so urgent that, on December 18, 1874, Prof. H. performed an operation which he designates as resection of the larynx. It consisted in splitting the thyroid cartilage in the median line, and then making a sub-perichondrial dissection of the anterior halves of the two sides, and removing them with forceps. The operation was so far successful that the patient regained the power of speaking intelligibly, and of swallowing liquids and solids. Subsequently, however, his condition deteriorated, and he succumbed to tuberculosis on November 2, 1875. At the autopsy, syphilis, which had been suspected, but denied, was proved to have been at the root of the laryngeal disease.—*Med. Record*, April 22, 1876.

OPHTHALMOLOGY.

41. *Atropia Poisoning from the Application of a Solution to the Eye.*—Dr. NETTLESHIP records (*Brit. Med. Journ.*, April 8, 1876) the following case of this, which should be a caution against the too free use of this article as is so common among German ophthalmic surgeons.

"Mrs. Sarah S., æt. 44, came to me at the South London Ophthalmic Hospital, on January 29th, for an attack of iritis in the right eye. The attack was a mild one, of only a few days' duration, and I was unable to come to a positive conclusion as to its cause; I, therefore, ordered simply strong atropine drops (sulphate of atropine, four grains to one ounce), to be used several times a day. This was repeated at her next visit, February 2d. She then did not come again till the 12th, when she excused her absence by saying that she had been ill with a bad 'bilious attack.' On further inquiry, it transpired that the chief symptoms of this 'bilious attack' had been dryness of the mouth and throat, a sour taste in the mouth, dryness and burning in the stomach, repeated vomiting, and partial delirium. These symptoms had not entirely passed off, and she still had the dryness of the mouth and sense of burning at the stomach. The drops had lasted since the former visit, she had been using them all the time, and the pupil of the inflamed eye had become widely dilated. There was no dilatation of the other pupil, nor any failure of accommodation more than her age would account for in it. The atropine was discontinued; and her disagreeable symptoms subsided in a few days.

"Of the group of symptoms described by this patient, it may be noted that some were those commonly mentioned as most characteristic of atropine poisoning, viz., the dryness of mouth and throat and the cerebral disturbance; the dryness she described as passing 'down to the stomach,' and she said that the region of the stomach 'felt as if she had a mustard plaster on it,' and the cerebral disturbance she specified as 'light-headedness,' 'so that she could hardly keep herself from going silly.' The nausea and vomiting appear also to occur in some cases, but less constantly, while the sour taste is not mentioned as a usual accompaniment. The patient, however, several times mentioned it; and, as the solution of sulphate of atropine has a faintly sour and bitter taste, which is sometimes distinctly perceptible after a drop has been applied to the eye, her description was probably correct.

"She was a rather thin, tall woman, of exceedingly restless, excitable temperament, usually rather pale, but easily flushing up. She had a peculiar habit of twitching one side of her face strongly whilst talking, especially when excited, and she always seemed to have a difficulty in keeping her limbs still even for a few moments. She was an intelligent woman, apparently in tolerable health, but had had syphilis many years before, and was the subject of an unusual kind of cortical cataract, the opacities being in the form of little blunt streaks or dots and small patches. She had not the slightest suspicion that the symptoms were caused by the eye-drops, and had taken a blue pill and draught for the supposed liver-disorder."

MIDWIFERY AND GYNÆCOLOGY.

42. *Pregnancy with Unruptured Hymen.*—Prof. GUSTAV BRAUN relates three cases of this occurrence. The first was that of a woman, aged twenty-six, who was admitted into the obstetric wards in the first stage of labour. On examination, the vagina was found to be closed by a thick hymen, which was perforated only by an opening which would just admit the uterine sound, situated immediately beneath the entrance of the urethra. The urethra itself was considerably dilated, and the forefinger could be easily passed through it into the bladder. Its orifice was prominent and surrounded by thick lips. The history of the patient was that at the age of eighteen she first suffered from

hypogastric pains, which subsided after three or four days without the appearance of any menstrual discharge. Similar pains recurred at several successive monthly intervals, and then she noticed a globular projection at the vulva, which one day suddenly gave way and emptied itself under the influence of a violent pain. From that time menstruation took place naturally. It would therefore appear that there had been retention of menses in consequence of a congenitally imperforate hymen, which had ruptured spontaneously by a small opening. The patient had been subject to sexual relations for the last two years, and from her account it was ascertained that the urethra had always been used in sexual congress. The author concludes that the seminal fluid must have found its way to the surface of the hymen, and the spermatozoa have entered through the small opening. The hymen was ruptured by forcing the finger through the small opening which existed, and labour was completed naturally.

The second case was that of a girl, aged fifteen, who was brought to Professor Braun's consulting room on account of a supposed abdominal tumour. The menses were said to have ceased for several months. On examination of the abdomen, the existence of pregnancy of fully eight months was ascertained, but the vagina was found to be closed by a hymen having an opening only large enough to admit a goosequill. The inner edge of the membrane was quite intact, but by steady pressure the forefinger could be introduced into the opening, without producing any bleeding, to a distance of 6 c.m. (2.3 inches). When the finger was withdrawn, the aperture closed up again to its former small size as if the membrane had been of India-rubber. Professor Braun afterwards enjoyed the opportunity of examining and questioning the man as well as the woman. He convinced himself that impregnation had occurred by the penetration, or partial penetration, of a relatively small penis, during a return in a carriage from a ball, and that no trace whatever had been left in the vagina of what had occurred.

The third case was that of a girl, aged about sixteen, who came under observation under similar circumstances, and was found to have arrived nearly at the full term of pregnancy. The vulva, however, was found to be completely virginal, and the vagina closed by a hymen having only a narrow aperture. In this case, also Professor Braun had the opportunity of questioning both parties, and learnt that the seminal fluid could only have been emitted externally to the vulva.—*Obstetrical Journ. of Great Britain and Ireland*, May, 1876, from *Wiener Medicin. Wochens.*, No. xiv. 1876.

43. *Chloral in the Pains of Parturition*.—Dr. POLAILLON stated, at the Paris Medical Society, that he had made trial of chloral in eighteen obstetrical cases, administering it as an enema in doses of thirty or forty-five grains dissolved in half an ounce of water or milk. According to the effect produced, or whether the whole was retained or not, a second enema was given at the end of an hour, and sometimes even a third. The quantity of chloral thus given varied from thirty to 120 grains; but the mean amount really absorbed did not exceed, on account of the rejection of a portion of the enemata, sixty or seventy-five grains. In all the cases it was given during the later hours of the period of dilatation, or during the expulsive period, and was habitually well borne. In some of the women the contractions were obviously less painful, without diminution of their frequency or energy, the labour terminating in the usual time; but in a somewhat larger number the uterine action was arrested, as well as the pains, the presentation remaining in the pelvis or at the vulva, so that in five cases out of the eighteen delivery had to be terminated with the forceps. In M. Polaillon's opinion, while chloral may be employed with advantage for assuaging excessive excitability of the uterus, or for the relief of pains produced by too violent contractions, it ought to be rejected in normal accouchements.—*Med. Times and Gaz.*, April 22, from *L'Union Méd.*, April 15, 1876.

44. *Complicated Labour, in which Collapse from Post-partum Hemorrhage was treated successfully by the Subcutaneous Injection of Ether*.—Dr. A. V. MACAN communicated to the Dublin Obstetrical Society a very instructive case

of this. The history of the case as communicated to him by Mr. Kilbride, one of the interne pupils of the Rotunda Hospital, was as follows: " Mary E., æt. 33, eleventh pregnancy. Has had four children at the full time, followed by four miscarriages, which caused her to seek medical advice. As well as could be gathered from her account, she was suffering from ulceration of the os. Six months after she was cured she again became pregnant, and the child, which she carried to the full time, is now about two years old.

" She enjoyed good health during the present pregnancy till within nine weeks of her full time, when she began to complain of a gnawing pain in the lumbar and hypochondriac regions. This was accompanied with great irritability of stomach, and a marked decrease in the amount of urine secreted—the abdomen being very much larger than in any of her former pregnancies.

" Her labour commenced on December 1st, about 7 P. M., the first stage being very long and tedious, the uterus being greatly over-distended by hydrops amnii. At noon on the 2d, the os being nearly fully dilated and the labour almost at a stand-still, the membranes were ruptured by Mr. Kilbride, and two gallons or more of liquor amnii allowed to escape. This gave great relief, though at first she felt a little faint. The uterus, however, remained in a state of complete inertia from that time until 8 o'clock P. M., though all the ordinary means, such as change of position, walking about, and a stimulating enema, were used to excite it to contract. It was on account of the uterine inertia that I was requested to see her, no serious difficulty being anticipated from the unusual presentation. However, when I arrived at about 8 o'clock she was up and walking about, being very cheery about herself, for the bearing-down pains had just commenced, and she said she was never very long once they had set in in earnest.

" On making a vaginal examination, the first parts that met the finger were the eyelids, which seemed unusually swollen. This did not astonish me much, as it was now eight hours since the membranes had been ruptured. On passing the finger backwards and towards the right side, I was able to recognize a very small nose, but I could not make out either the mouth or chin. I thought, therefore, it must be a case of brow presentation; but on passing the finger forwards and to the left in search of the anterior fontanelle, my finger came on a pulpy mass, which I at the time took for the caput succedaneum. On passing the finger between this and the pubes I almost at once came on an ear, which felt flatter and thicker than usual. Just behind the ear was a large bony projection, which felt like an elbow; and on passing the finger still further towards the left acetabulum, I felt the foetus give a most violent kick. This movement of the foetus was so marked that it had been noticed by almost every gentleman who examined the case. On passing the finger further round the presentation, it almost at once encountered the other ear, which was also thicker and flatter than usual. I now endeavoured to pass my fingers up at the sides, but they impinged against an irregular mass, the several component parts of which I could not recognize. The above peculiarities were so well marked that I was at once able to say I had never felt anything similar before; but it was not till after some thought I came to the conclusion that the face of an anencephalous foetus was presenting. This idea, when once entertained, was strengthened by the fact of there having been hydrops amnii, which showed that the ovum was to a certain extent unhealthy.

" As the question of diagnosis would be very important, if from any cause we were called upon to deliver artificially, it may be well briefly to recapitulate the points on which it was principally founded. The most striking of all was the peculiar feel of the mastoid processes; next to this came the shape of the ears and the short distance between them; and lastly, the violent movements of the foetus when the finger was passed from one mastoid process to the other, which was caused by irritation of the exposed portion of the medulla oblongata. By this symptom alone Tarnier has been able to diagnose the deformity even before the rupture of the membranes. If to these be added the hydrops amnii, a condition usually accompanying this deformity, no doubt can remain as to the nature of the case.

" In the present instance, as there was no indication for immediate delivery,

and as uterine action was getting stronger, I left the case in charge of Mr. Kilbride, giving directions to be sent for in two hours if the labour had not made good progress. At 11 o'clock P. M. a messenger arrived to say that the child had been born at about half-past ten, and that its birth had been followed by uterine inertia, with its usual concomitants—*post-partum* hemorrhage and retained placenta. On my arrival at 11.20 P. M. I found the woman with all the symptoms of severe *post-partum* hemorrhage, her pulse being 140, and scarcely perceptible. On making inquiries I was told that a large quantity of blood—more than a pint—had escaped immediately after the birth of the child, and that since that time, which was about an hour, large clots had been expelled at intervals, though every means had been used to excite contraction.

“On placing my hand over the abdomen I found the uterus large, soft, and flabby, and reaching fully to the umbilicus. On making firm pressure over the fundus some clots were expelled, but the placenta did not move in the least. Taking all the circumstances of the case into consideration, I thought it would be best to remove the placenta at once—an operation which, in the relaxed condition of the parts, did not seem likely to prove difficult. Two or three times, however, I thought my hand in the uterus had reached the fundus, and attempted to withdraw the placenta, only to find that it was still caught higher up. This, I think, was owing to the counter-pressure exerted by the left hand over the uterus causing partial inversion of the relaxed and flabby walls. Once also I heard air plainly pass into the vagina as the arm was partially withdrawn. As soon as the hand in the uterus had really reached the fundus, there was no difficulty in removing the placenta; and so little blood escaped after its removal that I thought it unnecessary to inject the perchloride of iron which was ready at hand. The uterus, however, was still very large, and on making firm pressure over the abdomen, air was plainly heard escaping from the vulva; and on making a vaginal examination, it seemed to me as if there was actually an empty space or hollow within the uterus. During all this time brandy had been freely administered, and when the woman was bound, I gave her a draught containing 45 minims of tincture of opium, and a drachm of chloric ether, in an ounce of brandy. This she swallowed with difficulty, and her state was so critical that I determined to try the effect of the subcutaneous injection of ether. Unfortunately I had no ether with me, and when I returned with it in about half an hour, the woman's condition had become very much worse. She was then quite insensible, deadly pale, and pulseless, with fixed eyes, dilated pupils, clammy face and extremities, and short and superficial respiration. On examining the vulva, I found there was a thin streak of blood flowing over the thigh, and as it was obvious that if the smallest quantity more of blood were lost the patient must die, I determined to combine the injection of the perchloride of iron into the uterus with the subcutaneous injection of ether. Having, therefore, grasped a fold of the skin covering the abdomen, I injected two syringefuls, or about 3ss, of ether well into the subcutaneous cellular tissue, and then injected about six ounces of the usual solution of iron into the uterus. Before I had finished injecting the iron the pulse returned at the wrist, and, emboldened by this, I injected a third syringeful of ether close to the former one. The effect produced was most marked, the woman soon turning of her own accord over on her side, and declaring, when asked how she was, that she felt much better. The change was so sudden and so great that every one in the room was satisfied it was produced by the ether. Shortly afterwards the woman vomited, and though reaction was a long time before it was established, the woman improved so much that I felt justified in again leaving the woman in charge of Mr. Kilbride, whom I have to thank for his great care and attention of the case throughout.

“I need not trouble you with the history of the woman's convalescence, which went on uninterruptedly. She was carefully syringed every day with Condyl's solution and warm water, until the discharge, which was at first very offensive, became natural; and on the twelfth day she was able to sit up, though still very weak and anæmic.

“With regard to the subcutaneous injection of ether,” Dr. M. remarks, “there are one or two things which require further explanation. The first is the quantity to be used. This depends entirely on the patient's pulse. Professor

Hecker frequently injects fifteen syringefuls (about ziv) from three to five at a time, at short intervals. The injection may require to be repeated, as the effect is very transitory. The part most suitable is the loose abdominal walls, but the gluteal region is easier got at if the woman has on a binder. The only thing to be attended to in making the injection is to pass the syringe deep enough; if you fail to do this, you will probably have troublesome abscess. Professor V. Hecker has never seen an abscess formed at the seat of the injection. The injection itself is rather painful, but this is of little moment if his statement be true, that it will in many cases render transfusion unnecessary; even if not quite so efficacious, it is at all events free from danger, and can be carried out without any assistance or complicated apparatus. Its use need not at all be confined to cases of *post-partum* hemorrhage. I have myself since used it in accidental hemorrhage, where it enabled me to deliver at once, though the patient had been pulseless for more than an hour. I have also used it in puerperal fever, but without permanent benefit, though the pulse, which could not be felt before the injection, returned almost immediately; also in a case of rupture of the uterus, where, I think, it prolonged life. You yourself, Mr. President, have, I think, used it successfully in a case of placenta prævia."—*Dublin Journ. of Med. Science*, May, 1876.

45. *On the Complete Evacuation of the Uterus after Abortion.*—Prof. ALEX. R. SIMPSON, in a paper published in the *Edinburgh Medical Journal* for May last, points out the evil effects of incomplete abortions, and the importance of completely evacuating the uterus. "The evil effects of incomplete abortion," he says, "are either immediate or remote. The great immediate risk is the occurrence of excessive hemorrhage, which, though but rarely fatal, is sometimes very alarming, and always leaves the patient in a state of deteriorated health. Then, apart from the chances of decomposition of the retained fragments, or of the discharges that attend it, and the possibility of septic absorption from the surface where separation may be taking place, the uterus which contains a foreign body remains decidedly hypertrophied, so that, when it finally becomes evacuated, the walls may remain permanently thickened and the cavity enlarged. In a patient with the uterus in such a condition, dislocations of the organ easily occur. Such imperfect involution may easily be the starting-point of other morbid changes; and thus it comes about that many of the women who come under observation suffering from uterine affections can trace back the commencement of their distress to an abortion in the early months of gestation.

"When we have to do with a case of abortion in which the stage of expectancy is clearly over, and the patency of the os internum, or the persistence of the pains, or the hemorrhage long continued or profusely flowing, call for active interference, there are two main indications to be fulfilled, viz., 1st, to restrain the hemorrhage, and, 2d, to procure the perfect removal of the ovum."

To accomplish the former he says: "1st. The uterus must be compelled to steady action by the administration of ergot, introduced in the form of a strong solution of ergotin¹ into the subcutaneous cellular tissue—a mode of administration of the drug which is destined, I believe, to supersede those with which we have so long been familiar; for the subcutaneous injection of ergotin sets up the uterine contractions with such speed, such certainty, and such safety, that the hypodermic syringe will be found an indispensable part of the furnishing of every obstetric bag.

"2d. Pending the onset of effective pains, and with the view of at once hastening them and preventing the escape of the blood, we plug the genital canal. For the most part, and as if it were the best in all cases, authors recommend the use of the vaginal tampon. Now, the plugging of the vagina,

¹ I use for hypodermic injection a solution of one part of ergotin in three of water, with ten or twelve grains of chloral in each half ounce bottle of the mixture. Ten drops of this fluid give the action of the drug with great certainty, and I have seen no ill effects from it.

by whatever material, is sometimes the only expedient to which we can have recourse, and we may rely on it with much certainty for averting the immediate danger of excessive hemorrhage. But it seems to me that, where we have our choice, its application ought to be restricted to those cases where there is still some hope that, if we succeed in arresting the hemorrhage, we shall at the same time succeed in averting the impending abortion. Otherwise we have a means of controlling the bleeding more directly, at once less irksome to the patient, and less troublesome of application by the practitioner, in the cervical plug. For this purpose there is nothing so efficient as a good-sized sponge-tent, prepared by being dipped in a disinfectant solution before being compressed by the whipcord. In my judgment, nothing can take the place of the sponge-tent for rapid, kindly, and complete dilatation of the cervical canal."

For the complete evacuation of the uterus, he says: "We have to pass one or more fingers into the cavity of the uterus to explore the entire cavity, to separate from its walls any adherent portion of the ovum, and then to extract the separated mass. I say at once, and simply, that it is the fingers of the operator that are to do the intra-uterine work, for I am quite at one with those who deprecate the use of instruments, such as curettes, wire-loops, crotchets, and abortion forceps, for the *detachment* of retained ova or their fragments. When the adhesions have been all separated by the finger, it may sometimes facilitate the removal of the loosened body to seize it with such instruments, and in that case, a pair of long dressing forceps, or polypus forceps, suits as well as any special implement; but the detaching of the adherent portions of the placenta should in no case be entrusted to these, or attempted with them, seeing that it can always be effected by the use of the sense-guided finger.

"But how are we, with the finger or fingers, to reach so high in the cavity of the uterus as completely to surround the ovum? To begin with, the patient should, as a rule, be anæsthetized. The manipulations necessary to secure a satisfactory result cause suffering, though not to a great degree, which we can always save the patient by bringing her under the influence of chloroform. And at the same time that her sense of pain is abolished, her voluntary muscles are completely relaxed, and it becomes easy for the practitioner to press down the uterus through the abdominal parietes. Once and again I have found myself baffled in the effort to reach the fundus uteri in such a patient until I had chloroformed her; for, however willing the woman may be to further your efforts for her delivery, involuntarily she contracts the recti abdominis when you make pressure on the hypogastrium, or withdraws herself when you press the other hand against the perineum. The patient, then, having been anæsthetized, we may render the uterine cavity accessible to the exploring finger in one or other of two different ways.

"1st. We can push down the fundus uteri from above. The patient may lie either supine or in the ordinary obstetric position on her left side, with the knees drawn up; most frequently the right hand will be used for internal manipulation, while the left is applied to the abdominal surface. It rarely suffices to pass one finger alone into the vagina. In most cases the index and middle fingers are passed into the vagina, and while the middle finger is folded in the fornix to steady the uterus there, the forefinger is passed through the cervix. Or the middle finger can sometimes be more satisfactorily employed for the intra-uterine digitation, or, better still, both fingers may be passed into the uterine cavity. In the last case it may be necessary to have the other two fingers carried into the canal of the vagina, the thumb alone remaining external to the vulva. It is usually only in patients who have miscarried at the fourth month, or beyond it, that the hand requires to enter so far for the separation of the placenta, and then the vaginal cavity is relaxed and roomy enough easily to permit of it. Whilst the fingers of the right hand are thus seeking their way up to the recesses of the uterus, the left hand, applied above the brim of the pelvis, is pressing the uterus forcibly and steadily downwards into the pelvic cavity. In this way, in the great proportion of cases, we obtain perfect command of the uterine contents. The fingers of the two hands recognize each other through the double thickness of the abdominal and uterine parietes; and while the left hand keeps the fundus fixed firmly downwards, the forefinger of

the right peels off the adherent mass and forces it through the cervical canal. In the great proportion of cases, I repeat, we can in this manner compel the evacuation of the uterus, and when it fails us our resources are not yet at an end, for,

“2d. We can drag down the cervix from below. The first is the method that has most frequently been employed, and it has this in favor of its common employment, that abortions are more frequent in multigravid than in primigravid women; in women, therefore, in whom there is usually a degree of abdominal relaxation, which greatly favors its execution. But where the walls are more resistant, or the patient is so fat that the combined external and internal manipulation fail us, then we must seize one or other of the lips of the uterus—usually the anterior—with a volsellum, double or triple pronged, and slightly curved. One of the blades grasps the vaginal aspect of the front wall of the cervix as high up as the roof of the vagina, the other at a corresponding level within the cervical canal. The uterus is capable of being dragged far down without any injury to its ligaments or laceration in the bite of the volsellum. It may be pulled down with the right hand and kept fixed with it, whilst the fingers of the left pass into the cavity and explore and evacuate it. Or the volsellum may be held in the left hand, or given to an assistant, to keep the uterus depressed, whilst the more familiar right-hand fingers do the intra-uterine work. The cavity of the uterus is thus brought within full reach of the fingers, and we can—and in all those cases of imperfect delivery in the early months we ought to—control the emptying of the cavity from fundus to os.

“Whilst the method of gaining access to the interior of the uterus by pressing it down from above is that which has hitherto been ordinarily followed, my own experience leads me to expect that this second method, which I have just described, will largely supersede it. For, first, it is applicable in all cases where the other can be employed, and in some where the rival method is not available. Second, it is less painful, and may be carried out occasionally when there is not time for the administration of an anæsthetic. Third, it saves the expenditure of muscular power demanded of the practitioner, who presses and keeps the uterus pressed down from above only by overcoming the resistance of the abdominal walls. The one circumstance that will enable the bi-manual method to hold its ground is, that we may find ourselves called on to clear out the uterus at a time when we have no volsellum at command, whilst our hands we always carry about us.”

46. *Rupture of the Perineum.*—The following remarkable case of this, in which for several days after parturition there were the appearances of an ordinary severe laceration, not involving the sphincter ani; and subsequently without any discoverable additional cause there was complete division of the perineum, sphincter, and lower part of the recto-vaginal septum, is related by Dr. MATTHEWS DUNCAN (*Edin. Med. Journ.*, April, 1870).

“R. C., æt. 28, primipara, is an ill-made woman, of about 4 feet 11 inches in height. She has a contracted rickety pelvis, with projecting sacrum and otherwise reniform brim, whose conjugate is scarcely $2\frac{1}{2}$ inches. She had been about thirty-six hours in labour when delivery was completed. The waters had been discharged about a day before labour began. After thirty-one hours of regular pains, the os uteri was very high, and not larger than easily to admit the finger, though quite soft, and the head was still high above the brim. The cervix was dilated by India-rubber bags for about four hours, and then delivery was effected by version and podalic extraction, the head being perforated when its base was brought to the brim of the pelvis. No difficulty was experienced in completing delivery after the base of the skull had passed the brim. The perineum was lacerated, but as there was nothing apparently peculiar about the accident, the part was not particularly examined at this time. The child weighed 6 lbs. 10 oz.

“Oct. 9. The day following delivery. Pulse 96, temp. 99°. Complains of severe pain in the region of the external genitals. The perineum found to be ruptured. A linear fissure of the skin only extended to the verge of the anus,

whose sphincter was found to be entire by passing the finger through it. This fissure through the skin (or split skin) was half an inch in extent. The depth of this linear fissure is very little, probably not through the corium, for it is not increased by separating the labia and adjacent parts. When the labia were separated, the vaginal structures were seen to be entire for at least one-quarter of an inch further forwards than the entire part of perineum, including the split skin. The wound is healthy, but around it and in the labia there is redness, such as is seen over diffuse cellular inflammation. The urine has to be drawn off; reaction acid; is albuminous.

"10th. Slight jaundice and vomiting. Pulse 96, temp. 98.8°. Bowels moved by medicine. Urine has to be drawn off. State of perineum as before.

"11th. Pulse 92, temp. 98°. Urine has to be drawn off; lithates copious; no albumen. Perineum less inflamed.

"12th. Jaundice diminishing. No vomiting. Pulse 92, temp. 97.8°. Urine has to be drawn off. Perineum has lost its swelling and diffused redness. Cutaneous fissure appears to be as before.

"13th. Is comfortable to-day. Pulse 84, temp. 99°. Urine has to be drawn off. Perineum not examined.

"14th. Pulse 92, temp. 100.6°. Urine has to be drawn off. Perineum not examined.

"15th. Pulse 88, temp. 98.8°. Urine has to be drawn off. Perineal laceration as before. Wound granulating. Anus found entire.

"16th. Pulse 100, temp. 102.5°. Bowels acted upon. Three motions. Urine spontaneously discharged. Perineum not examined.

"17th. Pulse 100, temp. 101.8°. Urine has to be drawn off, and continued to be so till the 24th. Perineum not examined. She complains of pain in the external genitals.

"18th. Pulse 96, temp. 100.5°. Perineum not examined.

"19th. Pulse 96, temp. 101.4°. Slight attack of phlegmasia dolens in left leg. Perineum not examined.

"20th. Pulse 88, temp. 99°. Perineum examined, and found to be completely divided in its whole length, the fissure extending through the sphincter ani for an inch above the verge of the anus. The newly observed wound was clean, but small portions of soft slough were observed about it. It must be remarked that the part had not been examined by me for five days, and was regularly washed by the nurse in attendance. Except this great fissure no appearances of disease were observed.

"When she left the hospital the appearances were as before, closely resembling those found after an ordinary laceration of the same extent produced primarily, by over-distension during the birth of the foetal head.

"The further history of the case presents nothing of special interest. The patient was dismissed from the hospital on the 30th October in a convalescent condition, and with advice to undergo an operation for restoration of the perineum after some time had elapsed."

47. *Rupture of the Uterus.*—Dr. BANDL gives his conclusions relative to this accident founded upon thirty-two cases, thirteen of these observed by himself and nineteen taken from the records of the Vienna lying-in hospital. He has not found in one single case that pathological change in the substance of the uterus, which has so generally been assigned as a predisposing cause, more especially in multiparæ. The uterus was always thick, well contracted, high up, and the cervix very thin. The fissure was nearly always found in the cervix, and even when the body of the uterus was torn it began there. The peritoneum was never separated from the fundus, only in the lower parts. Bandl believes the rupture is always due to disproportion; in the thirty-two cases there were nineteen of narrow pelvis, three of hydrocephalus, eight of shoulder presentation, one prolapse of the foot with the head, and one case unexplainable. Pressure does not produce rupture, as frequently sloughing occurred without rupture in one case both were present though at different points. An unyielding os uteri, rudimentary or double development, fibroid tumours are often stated as

causes, but this is not proved. Bandl agrees with Chiari, Braun, and Spaeth, in considering that the abnormality is due to an excessive thinning of the cervix occurring during labour; he has found by measurement that the walls of the uterus in multiparæ, especially when there has been disproportion in previous labours, were much developed. In normal circumstances, the cervix is drawn back over the head of the child by the muscular uterus; the orificium internum remaining, as investigation on the living and dissection on the dead subject show, about the level of the brim of the pelvis. If there is a disproportion which does not allow the presenting part to descend into the pelvis, the cervix is abnormally stretched, the internal orifice is raised a hand's breadth above the brim, and so rupture becomes possible. If this abnormal condition has once existed, it takes place more easily in future labours, which is the reason why ruptures take place more easily in multiparæ. Bandl believes that rupture can be recognized as threatening when the internal orifice gradually ascends, whilst the cervix stretches and the fundus acquires a lateral position.—*Brit. and For. Med.-Chir. Rev.*, April, 1876, from *Centralblatt*, No. 33, 1875.

48. *Iodoform in Vaginismus and Fissure of the Anus.*—MONS. TARNIER mentions an instance of a young woman, aged thirty-two, who had been married seventeen years, and was affected with an extreme hyperæsthesia of the vulva, causing extreme torture when coitus was attempted, there being also pain on walking, where iodoform dusted over the vulval outlet produced insensibility of the parts within a few hours, and relieved completely the distressing symptoms. He also employed it in a most intolerable fissure of the anus, which had resisted all the narcotic and astringent remedies usually employed in such cases. After a single application the pain diminished considerably, and a cure was effected in a few days.—*Obstetrical Journ. of Great Britain and Ireland*, May, 1876, from *Journ. de Méd. et de Chirurg. Pratique*.

49. *Abdominal Abscess mistaken for an Ovarian Cyst.*—The following instructive case of this is related in the *Glasgow Med. Journ.*, April, 1876. A woman æt. 58 was transferred to Dr. E. Watson's ward in the Royal Infirmary as a case for ovariectomy. The consultation agreed that the physical signs of an ovarian cystic growth were present. On 7th March, 1875, when the operation was commenced by cutting into the mesian line through the abdominal wall, a large quantity (about six quarts) of thick pus escaped. When the finger was introduced through the wound, it passed into a cavity, in the lower part of which the organs of the pelvis were felt covered with flocculent lymph, and above, the wall of the abscess formed a complete partition between its cavity and the intestines. No hair, or other foreign substance, was found in the pus. The abscess was thoroughly evacuated, and the wound dressed antiseptically. A drainage tube was kept in for a time, and the discharge gradually diminished. The patient made an uninterrupted recovery, and was dismissed from the Hospital on 6th May. The opening then was still unclosed, though much reduced in size, and there was almost no discharge from it. The woman has since called at the Hospital, and remains in excellent health. The wound may be said to be now closed.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Ovariectomy; Polycystic Ovarian Tumour; Extensive Adhesions, both Parietal and Visceral; No previous Tapping; Incision eleven inches in length; Recovery. By JAMES P. ORR, M.D., of Andersonville, Franklin County, Indiana.

Patient an American, married, aged 20 years; mother of two children, youngest child eight months old. Tumour first observed two years ago. Did not notice it especially until after delivery of last child, eight months before operation. Was treated by different physicians for ascites, and perhaps a dozen other suspected maladies. Menstruation began at the age of fourteen; was regular until first pregnancy occurred, at age of sixteen. Menses did not recur between pregnancies. The abdominal enlargement was marked after birth of last child, and at the time of first examination, six months after last delivery, she was as large as usual at full term. The enlargement increased rapidly, and on November 9, 1875, the tumour was removed. Squibb's ether, preceded by chloroform, was administered, and, partly on account of the universal and inveterate adhesions, and partly because of the imperfect anæsthesia, the operation occupied nearly three hours. The tumour consisted of the left ovary, and weighed thirty-two pounds. The patient before the operation weighed one hundred and eighteen pounds, was in poor health and much emaciated.

The pedicle was tied by a double (Chinese silk) ligature, cut short and dropped into the cavity. Silk ligatures were used wherever a ligature was necessary, all being cut short and returned. On the eighteenth day, a pouching at the lower end of the incision induced me to open the wound by a cut one-half inch in extent at that point, during the next fifteen days first blood clots, then pus in quantities diminishing from sixteen ounces per twenty-four hours was removed at this wound. Each of these fifteen days an antiseptic solution of common salt and carbolic acid in water, 96° F., was thrown into the cavity through this opening by means of a simple douche, acting by force of gravity from greater or less elevation of the vessel containing the fluid. The patient made a gradual but regular recovery. Pneumonia complicated the case during second and third week, and on the twenty-second day of December the patient was sent home cured. The patient was taken to my own home and nursed by my family, and this fact may be mentioned as an element in her cure. Now, only two months since the day of operation, the patient (a very poor woman) is able to do most of her household work.

On January 16th, 1876, sixty-eight days after the operation, the menses reappeared for the first time since the first pregnancy? A small umbilical-like protrusion of tissue remained at the seat of the last incision, and by close inspection two fine openings were discernible in this projection, neither of which was probed. From this point small quantities of blood have appeared for four successive periods, at the time of the regular

menstrual flux. Spencer Wells, *Diseases of the Ovaries*, p. 372, says this occurs in perhaps one-third of his clamp cases. He also says: "I have known this to occur where the ligature was used, and cut short." The patient at this writing, six months after the operation, has, to all appearances, entirely recovered.

A Case of Temporo-parietal Fracture without Depression, involving both Anterior and Posterior Branches of the Middle Meningeal Artery, Intra-cranial Hemorrhage, and Death from Cerebral Compression. By S. S. TURNER, M.D., of Standing Rock Agency, Dakota.

At about 11 o'clock on the night of December 14, 1875, I was called to see W. McK., aged about 38, a native of Ireland, who, it was reported, had been shot only a few moments previously.

I found the man lying down, but he readily raised himself up in bed, and talked cheerfully. I examined him carefully for gunshot wound, but found none. The patient then stated that upon reflection he knew he was not shot, but was struck with a club, although two shots (distinctly heard by the writer) were fired at him at very close range.

In proof of the blow, I discovered the mark of the bludgeon, very distinct, extending from the inferior border of the lower maxilla, immediately in front of the angle, to the zygomatic arch, on the left side. There being as yet little or no tumefaction, and no abrasion, I did not discover that the injury extended to the temporal region, the hair concealing the evidences of contusion which were readily seen upon the face.

A careful examination of the jaw revealed no fracture, and, as the patient expressed himself as being "all right," I left him for the night. A slight impediment of speech was noticeable, a "thickness of tongue," such as is often observed in persons who have been drinking freely, but as the patient acknowledged having taken "a little something," I attributed the impediment to that something.

At about 9 o'clock the following morning, I was again summoned, the messenger alleging that the patient had fallen asleep about 3 o'clock, A. M. (between four and five hours after the receipt of the injury), and had slept ever since, and they were unable to wake him.

I found the man insensible, his pupils dilated and insensible to light, his breathing stertorous, his pulse full and strong, but apparently a little slower than normal. Examined the left side of the face and head, and found tumefaction of the soft parts extending from the lower border of the maxilla to the parietal eminence, seven or eight inches in extent. After the most careful examination, however, I was unable to detect any depression of bone, or any other local evidence of fracture.

Diagnosis: Fracture, either direct or by contrecoup, without depression, involving rupture of a bloodvessel, the symptoms being due to cerebral compression from hemorrhage within the cranium.

Feeling uncertain about the exact location of the hemorrhage, I hesitated about trephining, an operation always fraught with danger; and finding that the patient breathed easier when lying upon his right side, with head and shoulders elevated, I placed him in that position and applied cold over the left temporal region.

At 1 P. M., finding the face becoming more flushed, the pulse weaker, and the breathing growing more laborious from mucus accumulation in the air tubes, I called in consultation A. A. Surgeon F. A. Davis, U. S. A., and after examination it was decided to make an exploratory incision, upon the results of which, further procedure should depend.

By a crucial incision, the skull in the left temporal region was laid bare, revealing extensive fracture of the temporal and parietal bones, with, apparently, slight but uniform depression of the whole temporal region. The direction and extent of the principal lines of fracture may be indicated, with sufficient accuracy for all practical purposes, as follows:—

1. The superior or parietal fracture, beginning at the coronal suture half an inch above the superior border of the temporal bone, and curving backward under the parietal eminence for the distance of two and a half inches, then dropping down to the squamous suture. Total length of fracture, three and a half inches. Artery involved, the anterior branch of the middle meningeal.

2. Beginning at the speno-temporal articulation, and following the groove of the posterior branch of the middle meningeal artery for the space of one inch, then passing upward to the superior border of the temporal bone. Total length of fracture, two inches. Artery involved, the posterior branch of the middle meningeal.

3. Situated three-fourths of an inch posterior and inferior to the second fracture, and following nearly the same direction, the point of greatest separation being one inch. Length of fracture, one inch and a half.

4. Other small fractures of one or both tables aggregated about three inches, giving a total of about ten linear inches of fracture, without detaching or depressing a single fragment of bone.

The use of the trephine was at once determined upon, and the instrument applied immediately above the line of the superior fracture, Dr. Davis operating at my request. The operation was protracted twenty or thirty minutes by the breaking of the trephine, and the consequent necessity of sending to the hospital for another; and the patient ceased to breathe just as the circle of bone was removed, and an extensive blood clot brought into view.

At 10 o'clock on the morning of the 16th, twenty hours after death, assisted by Dr. Davis, I made an examination of the cranium and its contents. A large amount of blood had oozed through the opening made by the trephine.

On removing the calvarium, an extensive clot was found to occupy the left temporo-parietal region, inducing marked indentation and compression of the left hemisphere. The clot was not weighed, but Dr. Davis and myself concurred in the estimate of six or eight ounces.

The vessels of the dura mater were not injected with the view of determining all the points of rupture, but the blood stains upon the fractured edges of bone indicated rupture of the arterial branches already named. The membrane itself was not ruptured, and the brain received no textural injury.

Surgeons will of course form their own opinions as to whether prompt operation, upon the discovery of the patient's condition in the morning, would have afforded him a chance of life, or whether the delay in operating was justified by the circumstances. I report the case briefly and without comment, solely for what it may be worth to surgeons of limited experience, who are liable to encounter a similar responsibility.

Report of two Cases of Diseased Bones, treated by the Application of Villate's Solution. By WM. T. THACKERAY, M.D., of Lexington, Ky.

CASE I. Edward C., æt. 48 years, a carpenter by profession, and a man of very irregular habits. On the 19th of June, 1875, while intoxi-

cated, he was blown by a wind-storm against a pile of bricks, and received a severe contusion of the right knee, upon the site of an old injury received twenty years previous—a cut by an adze.

I was called to see the case July 28, 1875, and found the patient very much reduced, and suffering excruciating pain in the knee-joint, which was much swollen; there was an opening about an inch above the upper margin of the patella, and through which was discharged a thin bloody pus and synovial fluid; the introduction of a probe revealed the bones concerned in the knee-joint almost entirely denuded of their coverings, and so soft and spongy that the probe could be easily pushed into their substance; there was a sinus extending down the outer side of the joint to the head of the tibia; this sinus I opened freely at its base.

The treatment was as follows: The limb was fixed on a double-inclined splint (made with sides like an ordinary fracture box), and swung by pulleys from the ceiling; a solution, consisting of Villate's solution¹ one part and water ten parts, was injected into the joint twice daily, sufficient being used to fill the cavity; the part was then enveloped in a large poultice of flaxseed meal.

The general treatment consisted of quinia sulph. grs. ij, with ol. morrhuae, ʒss t. i. d. Twice during the course of the treatment I was obliged to use hypnotics, once morphiae sulph. gr. $\frac{1}{4}$, and once hydrate of chloral, grs. xx.

The intense pain was relieved after the injection had been used two or three times, and did not return except when the limb was suddenly moved; there was considerable nervous twitching of the muscles of the thigh, but these were controlled by a roller bandage.

September 23d the patient was enabled to go out on crutches, and at my last visit, December 12th, he could support his weight upon the diseased leg. At this date the patella had ankylosed to the fibula, but the joint was susceptible of considerable motion, the only difficulty noticed by the patient being a crackling sensation, which he described as being "like the cracking of the joints when pulled when he bent the leg," the bending being done by the voluntary contraction and extension of the muscles.

CASE II. James W., æt. 45 years, an hostler; caries of the sternal end of the left clavicle, there being an open ulcer exposing the diseased bone. The history of this case is unknown, further than that the trouble commenced with "a rising," as the patient expressed it, and that resulted in the condition of affairs existing when I saw it, eight weeks after the first signs of the disease.

July 30, 1875. Used Villate's solution one part, water ten parts, and applied this directly to the ulcer by means of a sponge and bandage, and kept the dressing continually wet with the solution; at the end of the third day all appearance of the disease had disappeared, and healthy granulations were beginning to form. At the end of two weeks the sore had healed entirely, and quite rough digital examination produced no inconvenience to the patient.

¹ The formula for this is as follows: **R.**—Sol. plumbi subacetatis, fʒiv; zinci sulphatis, cupri sulphatis, aa ʒij; acetum vinum album, fʒxxvj.—**M.** It is absolutely necessary to use the white wine vinegar, as pyroligneous acid or any other vinegar acid makes an entirely different compound. The solution, when properly prepared, should be of a light-green opaque colour.

DOMESTIC SUMMARY.

Primary Sarcoma of the Iris, cured by Excision of the Tumour.—Dr. CHARLES J. KIPP, of Newark, N. J., reports (*Archives of Ophthal. and Otol.*, vol. v. No. 1, 1876) a case of true, white, spindle-celled sarcoma, attached to the inner lower quadrant of the iris by a broad base, and projecting into the anterior chamber, and almost completely covering the pupil. The patient was a robust man, aged 36. He first noticed the tumour twelve years ago as a reddish nodule, of about the size of a pin's head, near the lower pupillary margin of the iris of the right eye, but as it gave him no pain he paid no further attention to it. The growth of this tumour was exceedingly slow till about a month ago; since that time it has, however, grown more than in the preceding twelve years. During the last few weeks he has also noticed a gradual failure of sight, and has occasionally suffered from pain in his right eye.

The tumour with the adhering iris was removed through an incision in the sclero-corneal margin. On the thirteenth day all symptoms of irritation had disappeared, and on examination the sight of this eye was found to be equal to that of his left.

The patient was last seen about eighteen months after the operation, at which time the eye was entirely free from disease, and his general health was unimpaired.

The starting-point of the tumour was in all probability the stroma of the iris. With regard to the causes which produced the growth, nothing is known; the eye had never received an injury, and there was no evidence of sarcomatous disease in any other part of the body.

Dr. Kipp refers to three previously recorded cases of sarcoma of the eye, in all of which the eyeball was enucleated, and at the time he operated on his patient's eye he was not aware that a sarcomatous tumour of the eye had ever been excised, but since then he has learned from *Prof. Arlt's Operationslehre* (*Handbuch der Gesammten Augenheilkunde, redigirt von Prof. A. Graefe und Prof. Th. Saemisch*, Band iii., Cap. ii., page 420, published in 1874), that he knows of two cases in which such tumours were removed by a procedure analogous to an iridectomy. No history or description of the cases is given, but it is stated that they were last seen five or six weeks after the operation, and that at that time there were no signs of a relapse.

Pistol Wound of the Heart, the Ball passing through both Ventricles and Right Auricle and lodging at the Root of the Right Lung; Death 38 months afterwards.—A remarkable case of this is reported (*The Clinic*, May 27th) by Dr. P. S. CONNER. The patient was a lad æt. 15 , who was accidentally shot December 31, 1872. The ball entered over the sixth rib about one inch posterior to right lateral line, penetrated the thorax, and lodged. Hemorrhage was quite profuse at the time, but had ceased when Dr. C. saw him sixteen hours afterwards. Severe pleuro-pneumonia was soon developed, followed by pericarditis and endocarditis, but these subsided by the twentieth day and convalescence steadily went on. But examination showed extensive valvular lesions of the heart. There was marked anæmia with want of muscular strength, and this continued till his death, thirty-eight months after the injury. At the autopsy "the heart was seen to occupy a space much larger than normal. The pericardial sac was completely obliterated by adhesion of its layers, and the heart when removed measured twelve inches in its greatest circumference, and weighed twenty-one and one-half ounces. Old pleuritic adhesions existed on the right side, easily broken down except opposite the cicatrix of the external wound, where a band was found so firm that when the lung was removed from the chest the visceral layer of the pleura was stripped off over a space one-half inch in diameter.

"Some ʒiv of serum was in the pleural cavities and over a pint in the peritoneal cavity. The abdominal viscera were all in normal condition. Upon section the left lung and upper and middle lobes of the right lung

were found healthy. An incision made into the lower lobe through the denuded space already referred to, showed decided hepatization and imbedded in the lung tissue at a depth of half an inch, unencapsulated and with no evidences of specially diseased tissue about it, was a spicula of bone a half inch long, one-eighth inch wide, and a line in thickness, evidently a splinter from the rib. No cicatrix of a ball wound could be found, and attention was then directed to the heart. Upon the anterior surface of the right ventricle, one inch to right of the ventricular septum and an inch below the auriculo-ventricular, septum was an indurated patch involving the entire thickness of the wall with a very faint cicatricial marking externally. Upon opening the ventricles, there was shown a canal about one-fourth of an inch in length with smooth cicatricial orifices and lined by endothelium extending from immediately below the centre of the left posterior segment of the pulmonary valve to a point just between the anterior segments of the aortic valve. Upon the ventricular face of the left anterior segment of this valve, was a vegetation almost circular in shape, one-fourth inch in diameter. The posterior segment was torn, and its remaining surfaces covered with vegetations of large size, some not less than one inch in length. An opening with ragged edges, and covered with vegetations on both sides, established communication with the right auricle at a point about one-third the distance from the fibrous ring to the opening of the superior cava. Upon the posterior wall at the point opposite in the normal position of the parts was a very distinct somewhat stellate cicatricial patch. At the root of the lower lobe of the right lung, just below the bifurcation of the main bronchus of this lobe, the ball was found lodged, completely encapsulated. Measurements made, show that it is conical, three-eighths inch long, one-fourth inch in diameter."

Large Aneurism of Femoral Artery cured by Galvano-puncture.—Dr. F. M. HAUCK reports (*St. Louis Med. and Surg. Journ.*, April, 1876) the following interesting case of this.

H. S., aged 40, presented himself for treatment for a tumour in the middle of the left thigh on the inner side. The tumour was tense to the touch, immovable, and indistinctly fluctuating; but, on the other hand, a distinct pulsation was felt, and by auscultation a strong aneurismal murmur could be heard. The patient could give no information about the cause of the tumour.

A pad and afterwards digital compression were unavailingly applied. It was then concluded to use galvano-puncture. Three platinum needles were inserted half an inch from each other into one side of the sac, to the depth of two inches, and were connected with the negative pole, completing the circuit by attaching the positive pole to a metallic plate placed above, or moved about the surface of the tumour. The constant current was employed twenty minutes. On withdrawing the needles considerable resistance was remarked, indicating that a coagulum had formed around them. In fact, two days afterward, when the tumour had become softer, three firm masses could be felt, each the size of a pigeon's egg. Two of these masses appeared to be adherent to the wall; the third fluctuated in the yet fluid blood. The pulsation and murmur were decidedly less. A not inconsiderable inflammation set in around the punctures, not, however, accompanied with much pain. Five days after the first sitting, the same procedure was tried, except that the needles were thrust into the other side of the tumour. Eighteen hours afterward, no pulsation or murmur could be detected, but again inflammation of the skin existed, the patient complaining this time of very severe pain. Ice-poultices were ordered, which were, perhaps, too energetically applied, and the next morning a round spot was found, two and a half inches in diameter, at the summit of the tumour, very suspiciously red. Diluted carbolic acid was used, to prevent the threatened gangrene of the skin, but without success, for after a few days all that portion of skin sloughed away, disclosing a firm dark-brown coagulum, over which was stretched the saphenous nerve. It was this nerve which, constantly stretched by a large, hard, round mass of blood, had caused the pain in the knee. It remained a few days, when it also broke away. And the coagulum thus exposed was gradually removed—about three ounces a day. The resulting cavity was filled with charpie-balls dipped in a solution of salicylic acid. This treatment

was continued for six days, when the coagulum was removed in all directions. It did not weigh less than two pounds.

Five months after the operation the wound was entirely healed, leaving a small, deep contracted scar, a slight stiffness of the knee, and a slightly marked anæsthesia of the inner side of the knee and lower portion of the thigh.

Case of Spontaneous Version by the Pelvis, under what seemed Impossible Conditions.—Dr. J. C. FAGER records (*New Orleans Med. and Surg. Journal*, May, 1876) the following case of this:—

On the 9th of March, 1876, Dr. Bezou was called to a robust woman, aged 42, a native of Gascony, who had been for over two days in labour, although it was her fifth confinement, but who was within two or three weeks of full term. The amniotic fluid had escaped from the beginning, and the arm of the child was hanging out. A midwife had charge of the case so far, and maintained that she had in no way interfered, that this arm had dropped there of itself. But the enormous swelling of the arm, and a *fracture of the humerus*, bore strong evidence to the contrary. Under such circumstances our confrère thought it advisable to call some one to share his responsibilities, and I was sent for.

I proceeded to a thorough examination at once, in order to ascertain the position of the fœtus. The woman was placed across the bed, and under full influence of chloroform. I introduced easily one hand into the uterus, behind the fœtus, in the direction of the concavity of sacrum, whilst the other was applied over the abdomen. I thus recognized that the back was behind, and the head in the right iliac fossa. In fact it was the right shoulder that occupied the inferior pelvis, but not alone; a portion of the thorax as proved by the ribs which could be felt distinctly, also entered into the composition of this complex mass, forming a cone with its base upwards. This confused mass was deeply engaged and impacted in the inferior pelvis.

I had to withdraw my hand after a few minutes, owing to the powerful uterine contractions; but I had arrived at the knowledge of the position, which was my main object; I remained also convinced that ergot had been given, although positively denied by the midwife.

Dr. Bezou also came to the same conclusions. He thought for a moment that he felt a foot; but he had to withdraw his hand on account of the violent contractions of the womb, although chloroform had been continued in such full doses that *all the voluntary muscles were in complete resolution*.

The inferior extremity of the fœtus being on the left (*right cephalic iliac, abdomino-anterior*), I had the woman turned on her left, and, placing myself behind her, I introduced my right hand, directing it anteriorly and, as much as possible, towards the left iliac fossa. But I found it entirely impossible to bring my hand in front of the fœtus, probably because its abdomen was somewhat pendulous. I had to turn my right hand over and slide it along the back of the fœtus, in order to proceed and reach the pelvis. Having thus some purchase on the inferior extremity of the fœtus, I had the woman turned on her back, so as to try to act at the same time and inversely over the superior, or scapular extremity of the fœtal trunk, with my left hand. I wished to apply in this particular case the *bipolar* version, so well described by Prof. Barnes, of London. I brought together my left index and median fingers, and firmly applied them in the right axilla of the fœtus; but I tried in vain, either simultaneously or successively, to move in an inverse direction one or the other extremity of the lever represented by the fœtal ovoid; nothing moved.

We then—Dr. Bezou and myself—stepped into the adjoining room to consult over the case, and came to the conclusion that our duty compelled us to interfere, and not to leave the delivery of the woman to the efforts of nature only.

The fœtus had certainly been dead for several hours, and we thought decapitation had to be resorted to; but previous to proceeding to the operation we determined to make another examination.

But nature had not been at rest. The arm was no more to be seen, and the breech was making its way through the vulva. I had only to support, and the work was done with wonderful ease. So that nature, left to itself during the fifteen minutes of our deliberation, had accomplished turning, which art with hours of energetic intervention had failed to accomplish.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

*Thirty-Sixth and Locust Streets, Philadelphia.***One Hundred and Eleventh Annual Session, 1876-77.**

PROFESSORS.

GEORGE B. WOOD, M.D., LL.D., Emeritus Professor of Theory and Practice of Medicine.

HENRY H. SMITH, M.D., Emeritus Professor of Medicine.

JOSEPH CARSON, M.D., Emeritus Professor of Materia Medica and Pharmacy.

ROBERT E. ROGERS, M.D., Professor of Chemistry.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.

FRANCIS G. SMITH, M.D., Professor of the Institutes of Medicine.

RICHARD A. F. PENROSE, M.D., Professor of Obstetrics and Diseases of Women and Children.

ALFRED STILLÉ, M.D., Professor of Theory and Practice of Medicine.

D. HAYES AGNEW, M.D., LL.D., Professor of Surgery and Clinical Surgery.

———, Professor of Materia Medica and Pharmacy.

WILLIAM PEPPER, M.D., Professor of Clinical Medicine.

JOHN NEILL, M.D., Professor of Clinical Surgery.

WILLIAM GOODELL, M.D., Clinical Professor of Diseases of Women and Children.

JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.

GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.

HORATIO C. WOOD, JR., M.D., Clinical Professor of Nervous Diseases.

LOUIS A. DUHRING, M.D., Clinical Professor of Diseases of the Skin.

H. LENOX HODGE, M.D., Demonstrator of Anatomy.

CHARLES T. HUNTER, M.D., Demonstrator of Surgery.

GEORGE M. WARD, M.D., Demonstrator of Practical Chemistry.

ISAAC OTT, M.D., Demonstrator of Experimental Physiology.

The Medical Faculty occupy an elegant and commodious building which affords ample space for Dissecting and Operating Rooms, and for their valuable Museum, Apparatus, and Library, and secures superior advantages to the student, in health and facility of study. Didactic Lectures and Laboratory Instruction are given in this building, and Daily Clinics in the UNIVERSITY HOSPITAL and in the PHILADELPHIA HOSPITAL, which are adjacent. Clinical instruction continues during the whole year, except July and August.

Besides the obligatory study of Practical Anatomy, practical courses are accessible, during the winter and spring, to students in Operative Surgery, Chemistry, Physiology, Comparative Anatomy, Clinical Medicine, Surgery, and Obstetrics.

STUDENTS WHO HAVE ATTENDED TWO FULL COURSES OF LECTURES ON ANATOMY, CHEMISTRY, MATERIA MEDICA, AND THE INSTITUTES OF MEDICINE, MAY BE EXAMINED ON THOSE SUBJECTS AT THE END OF THE SECOND COURSE, AND, IF APPROVED, WILL, AT THE END OF THEIR THIRD COURSE, BE EXAMINED ONLY ON THEORY AND PRACTICE OF MEDICINE, SURGERY, AND OBSTETRICS.

THE RECENT ADDITION BY THE BOARD OF TRUSTEES OF SEVERAL NEW PROFESSORS TO THE FACULTY, WILL IMPOSE ON THE STUDENT NO INCREASE OF EXPENSE OR DURATION OF STUDY, OR OTHER EXAMINATIONS FOR THE DEGREE THAN HAVE HITHERTO BEEN REQUIRED.

Matriculates in the Medical Department are entitled to attend, during the Spring and Summer, the lectures of the Auxiliary Faculty on Zoology and Comparative Anatomy, by H. ALLEN, M.D.; on Botany, by H. C. WOOD, JR., M.D.; on Hygiene, by H. HARTSHORNE, M.D.; on Medical Jurisprudence and Toxicology, by J. J. REESE, M.D.; and on Mineralogy and Geology, by S. B. HOWELL, M.D.

The Lectures of the Session of 1876-77 will commence on the first Monday (2d) of October, and terminate on the last day of February.

FEES.—For one full course of Lectures, \$140. For each professor's ticket for one course, \$20. Matriculation fee (paid once only), \$5. These fees are payable in advance. Graduation fee, \$30.

Letters of inquiry should be addressed to

ROBERT E. ROGERS, M.D., DEAN,
P. O. Box 2838 Philadelphia.

JEFFERSON MEDICAL COLLEGE.

PHILADELPHIA.

The Fifty-Second Session of the Jefferson Medical College will begin on Monday, 2d October, 1876, and will continue until 1st of March, 1877. PRELIMINARY LECTURES will be held from Monday, 4th September.

PROFESSORS.

JOSEPH PANCOAST, M.D., General, Descriptive, and Surgical Anatomy (*Emeritus.*)
 SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Institutes and Practice of Surgery.
 ELLERSLIE WALLACE, M.D., Obstetrics and Diseases of Women and Children.
 B. HOWARD RAND, M.D., Chemistry.
 JOHN B. BIDDLE, M.D., Materia Medica and General Therapeutics.
 J. AITKEN MEIGS, M.D., Institutes of Medicine and Medical Jurisprudence.
 J. M. DA COSTA, M.D., Practice of Medicine.
 WILLIAM H. PANCOAST, M.D., General, Descriptive, and Surgical Anatomy.

Special courses are also given on the following subjects:—

TOXICOLOGY, by Prof. RAND.

DISEASES OF THE CRANIAL NERVES, by Prof. MEIGS.

DERMATOLOGY and SYPHILITIC DISEASES, by Dr. F. F. MAURY, one of the Surgeons to the Philadelphia Hospital.

PATHOLOGICAL ANATOMY, by Dr. MORRIS LONGSTRETH, Pathologist to the Pennsylvania Hospital.

OPERATIVE SURGERY, with Operations on the Cadaver, by Dr. JOHN H. BRINTON, one of the Surgeons to the Philadelphia Hospital.

OPHTHALMOLOGY and OTOLOGY are treated both clinically and didactically during the entire course, by Dr. WILLIAM THOMSON, one of the Surgeons to the Wills Ophthalmic Hospital.

LARYNGOSCOPY, with DISEASES OF THE THROAT, by Dr. J. SOLIS-COHEN

The DEMONSTRATOR of Surgery, Dr. J. EWING MEARS, delivers a distinct course of Demonstrations of Surgery, with illustrations on the Cadaver, during the entire session.

PRACTICAL CHEMISTRY with *Qualitative and Quantitative Analysis*, the *Examination of Normal and Abnormal Products*, and *Manipulation* by the Student himself, is taught by the DEMONSTRATOR of Chemistry, Dr. W. H. GREENE.

PRACTICAL ANATOMY and MORBID ANATOMY. For the study of Practical Anatomy, a full supply of material is furnished *free of charge*. The Anatomical Rooms are spacious and provided with every convenience, and not only are subjects for dissection to be had without expense, but there are no incidental or extra charges of any kind. Demonstrator of Anatomy, T. H. ANDREWS, M.D.

CLINICAL INSTRUCTION is given daily at the College. The SURGICAL CLINIC is held on Wednesdays and Saturdays, by Professors GROSS, JOSEPH PANCOAST, and W. H. PANCOAST. The MEDICAL CLINIC, on Mondays and Thursdays, by Profs. DA COSTA, BIDDLE, and MEIGS. The CLINIC of Diseases of Women and Children, on Tuesdays, by Prof. WALLACE. The CLINIC of Diseases of the Eye and Ear, on Fridays, by Dr. THOMSON. The PENNSYLVANIA HOSPITAL is near the College, and the corps of lecturers includes Profs. DA COSTA and MEIGS. Prof. PANCOAST and Drs. MAURY and BRINTON are connected with the staff of the PHILADELPHIA HOSPITAL.

THE NEW HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE was begun in November, 1875, and will be completed by the close of the present summer; and it is confidently anticipated that it will be in full operation early in the ensuing session. It is situated in a spacious lot immediately west of the College, bounded on three sides by streets and a wide space on the fourth side, and will afford accommodation for at least one hundred beds. It is constructed according to the most approved principles of hospital architecture, and will be furnished with every necessary appliance for heating, ventilation, etc. A spacious amphitheatre, seating more than 500 students, is provided for Clinical Lectures, which, with daily visits to the wards, will form part of the regular services of the College.

FEES:

For a full Course	\$140
Matriculation Fee (paid once only)	5
Graduation Fee	30

A SUMMER COURSE of Supplementary Lectures is given, beginning 26th March, 1877, and extending through the months of April, May, and June. There is no additional charge for this Course to Matriculates of the College, except a registration fee of five dollars.

The Annual Announcement will be sent on application to

J. B. BIDDLE, M.D.,

Dean.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSIONS OF 1876-77.

THE Collegiate year in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Spring Session.

The Preliminary Autumnal Term for 1876-77 will open on Wednesday, September 13, 1876, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects, and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students expecting to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, September 27, 1876, and end about the 1st of March, 1877.

FACULTY

ISAAC E. TAYLOR, M.D., Emeritus Professor of Obstetrics and Diseases of Women, and President of the Faculty.

JAMES R. WOOD, M.D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

W. H. VAN BUREN, M.D., Professor of Principles and Practice of Surgery, Diseases of Genito-Urinary System, and Clinical Surgery.

LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery, Fractures and Dislocations, and Clinical Surgery.

ALEXANDER B. MOTT, M.D., Professor of Clinical and Operative Surgery.

WILLIAM T. LUSK, M.D., Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

EDMUND R. PEASLEE, M.D., LL.D., Professor of Gynæcology.

WILLIAM M. POLK, M.D., Professor of Materia Medica and Therapeutics, and Clinical Medicine.

AUSTIN FLINT, Jr., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSBY, M.D., Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., LL.D., Professor of Chemistry and Toxicology.

EDWARD G. JANEWAY, M.D., Professor of Pathological Anatomy and Histology, Diseases of the Nervous System, and Clinical Medicine.

Professors of Special Departments, etc.

HENRY D. NOYES, M.D., Professor of Ophthalmology and Otology.

JOHN P. GRAY, M.D., LL.D., Prof. of Psychological Medicine and Medical Jurisprudence.

EDWARD L. KEYES, M.D., Professor of Dermatology, and Adjunct to the Chair of Principles of Surgery.

EDWARD G. JANEWAY, M.D., Prof. of Practical Anatomy. (Demonstrator of Anatomy.)

LEROY MILTON YALE, M.D., Lecturer Adjunct upon Orthopedic Surgery.

A. A. SMITH, M.D., Lecturer Adjunct upon Clinical Medicine.

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week-day, except Saturday, two or three hours are daily allotted to clinical instruction.

The Spring Session consists chiefly of Recitations from Text-books. This term continues from the first of March to the first of June. During this Session, daily recitations in all the departments are held by a corps of examiners appointed by the regular Faculty. Regular Clinics are also given in the Hospital and College building.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Spring Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations, Clinics, and Lectures	35 00
Dissection (Ticket good for the following Winter)	10 00

Students who have attended two full Winter courses of lectures may be examined at the end of their second course upon Materia Medica, Physiology, Anatomy, and Chemistry, and, if successful, they will be examined at the end of their third course upon Practice of Medicine, Surgery, and Obstetrics only.

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. AUSTIN FLINT, Jr., Secretary Bellevue Hospital Medical College.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS.

NINETY-THIRD ANNUAL ANNOUNCEMENT. (1876-77.)

FACULTY OF MEDICINE.

CHARLES W. ELIOT, LL.D., President.	HENRY P. BOWDITCH, M.D., Assistant Professor of Physiology.
CALVIN ELLIS, M.D., Prof. of Clinical Medicine, Deane.	CHARLES B. PORTER, M.D., Demonstrator of Anatomy, and Instructor in Surgery.
JOHN B. S. JACKSON, M.D., Prof. of Pathol. Anat.	FREDERICK I. KNIGHT, M.D., Instructor in Percussion, Auscultation, and Laryngoscopy.
OLIVER W. HOLMES, M.D., Prof. of Anatomy.	J. COLLINS WARREN, M.D., Instructor in Surgery.
HENRY J. BIGELOW, M.D., Professor of Surgery.	REGINALD H. FITZ, M.D., Assistant Professor of Pathological Anatomy.
JOHN E. TYLER, M.D., Prof. of Mental Diseases.	WM. L. RICHARDSON, M.D., Instructor in Clinical Obstetrics.
CHARLES E. BUCKINGHAM, M.D., Prof. of Obstetrics and Medical Jurisprudence.	THOMAS DWIGHT, Jr., M.D., Instructor in Histology.
FRANCIS MINOT, M.D., Hersey Professor of the Theory and Practice of Medicine.	EDWARD S. WOOD, M.D., Assistant Professor of Chemistry.
JOHN P. REYNOLDS, M.D., Instructor in Obstetrics.	HENRY H. A. BEACH, M.D., Assistant Demonstrator of Anatomy.
HENRY W. WILLIAMS, M.D., Professor of Ophthalmology.	WILLIAM B. HILLS, M.D., Instructor in Chemistry.
DAVID W. CHEEVER, M.D., Professor of Clinical Surgery.	
JAMES C. WHITE, M.D., Prof. of Dermatology.	
ROBERT T. EDES, M.D., Professor of Materia Medica.	

OTHER INSTRUCTORS.

GEORGE H. F. MARKOE, Instructor in Materia Medica.
FRANK W. DRAPER, M.D., Lecturer on Hygiene.

THE FOLLOWING GENTLEMEN GIVE SPECIAL CLINICAL INSTRUCTION.

FRANCIS B. GREENOUGH, M.D., and EDWARD WIGGLESWORTH, Jr., M.D., in Syphilis.
JOHN O. GREEN, M.D., and CLARENCE J. BLAKE, M.D., in Otology.
JAMES R. CHADWICK, M.D., and WM. H. BAKER, M.D., in Diseases of Women.
CHARLES P. PUTNAM, M.D., and JOSEPH P. OLIVER, M.D., in Diseases of Children.
SAMUEL G. WEBBER, M.D., and JAMES J. PUTNAM, M.D., in Diseases of the Nervous System.

The plan of study was radically changed in 1871.* Instruction is given by lectures, recitations, clinical teaching, and practical exercises, distributed throughout the academic year. This year begins September 28, 1876, and ends on the last Wednesday in June, 1877. It is divided into two equal terms, either of which is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction. The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically from one subject to another in a just and natural order. In the subjects of anatomy, histology, chemistry, and pathological anatomy, laboratory work is largely substituted for, or added to, the usual methods of instruction.

Instead of the customary oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of written examinations on all the main subjects of medical instruction has been distributed through the whole three years; and every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction during his period of study.

DIVISION OF STUDIES.

For the First Year—Anatomy, Physiology, and General Chemistry.

For the Second Year—Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, Surgery, and Clinical Surgery.

For the Third Year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Students are divided into three classes, according to their time of study and proficiency. Students who began their professional studies elsewhere may be admitted to advanced standing; but all persons who apply for admission to the second or third year's class must pass an examination in the branches already pursued by the class to which they seek admission. Examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and General Chemistry.

End of second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

End of third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Examinations are also held before the opening of the School, beginning September 25th.

Students who do not intend to offer themselves for a degree will also be received at any part of the course, for one term or more. Any student may obtain, without an examination, a certificate of his period of connection with the school.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this school, have passed the required examinations, and have presented a thesis.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine additional facilities for pursuing clinical, laboratory, and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises the following branches: Histology; Physiology; Medical Chemistry; Pathological Anatomy; Surgery; Auscultation, Percussion, and Laryngoscopy; Ophthalmology; Dermatology; Syphilis; Psychological Medicine; Otology; Electro-therapeutics; Gynecology; and Obstetrics.

Single branches may be pursued, and on payment of the full fee also the privilege of attending

* In and after September, 1877, an examination on entrance will be required. For particulars see Catalogue.

any of the other exercises of the Medical School, the use of the laboratories and library, and all other rights accorded by the University will be granted. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—For Matriculation, \$5; for the Year, \$200; for one Term alone, \$120; for Graduation, \$30. For Graduates' Course, the fee for one year is \$200; for one Term, \$120; and for single courses such fees as are specified in the Catalogue. Payment in advance.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

DR. R. H. FITZ, *Sec'y*, 108 Boylston St., Boston, Mass.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

MEDICAL FACULTY.

A. H. CENAS, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

JAMES JONES, M.D., Professor of Obstetrics and Diseases of Women and Children.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLÉ, M.D., Professor of Physiology and Pathological Anatomy.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

ERNEST S. LEWIS, M.D., Professor of Obstetrics and Diseases of Women and Children.

THOMAS J. HEARD, M.D., Professor of Materia Medica and Therapeutics and Clinical Medicine.

ALBERT MILES, Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the forty-third year of its existence) will commence on Monday, the 17th day of November, 1876, and terminate on the third Saturday of March, 1877. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 20th of October, without any charge to students.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for

CLINICAL INSTRUCTION.

The act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received, during the last year, more than *four thousand* patients. Its advantages for professional study are unequalled by any similar institution in this country. The Medical, Surgical, and Obstetric Wards are visited by the respective professors in charge daily, from eight to ten o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss, Heard, and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Lewis, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administration of the hospital elect annually twelve resident students, who are maintained in the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Graduates of other recognized schools may attend all the lectures upon payment of the matriculation fee; but they will not be admitted as candidates for the Diploma of the University except upon the terms required of second course students. All fees payable in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean*.

ALBANY MEDICAL COLLEGE—MEDICAL DEPARTMENT OF UNION UNIVERSITY.

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HENRY MARCH, M.D., Curator of the Museum.

EUGENE VAN SLYKE, M.D., Demonstrator of Anatomy.

THE METHOD OF INSTRUCTION.

The aim of the Faculty is to make the course practical, useful, and scientific. It does this by combining with didactic lectures, clinical lectures, recitations, practical work in the laboratory and dissecting-room, and by the examination and diagnosis by students of cases assigned them, and by reports and criticisms of the same by the class and the professors.

HOSPITAL ADVANTAGES.

The Albany Hospital and St. Peter's Hospital, together with the Eye and Ear Infirmary and the Dispensaries connected with each, are, by the regulations of their governing boards, made available for clinical purposes to all its students.

Three or more Clinical Lectures are given weekly, and all the surgical operations of importance are performed before the class in the admirably lighted amphitheatre of the hospital.

The Faculty are well aware of the value of Clinical Instruction to the medical student, and endeavour to make this an especial feature of the course.

The appointments to positions in the Hospital as house physician and surgeon and apothecary are annually made, and are competed for by members of the graduating class.

FEES AND REGULATIONS.

The matriculation fee is \$5. The fee for a full course of one year, \$100. Perpetual ticket, \$150. Demonstrator's ticket, \$5. Laboratory ticket, \$10.

The graduation fee is \$25, which must be paid to the Registrar before the candidate can be admitted to an examination.

Students who have attended two full courses of lectures at other medical institutions will be required to pay \$25, and the matriculation fee.

LECTURE TERMS.

The regular term or course of lectures in the Albany Medical College begins on the first Tuesday of September in each year, and continues twenty weeks.

Five or more lectures are given daily during the term, with the exceptions of Saturdays and Sundays.

A spring course of lectures will begin on the first Tuesday of April next, and continue eight weeks.

For catalogues and further information, address

JACOB S. MOSHER, M.D., Registrar, Albany, N. Y.

DETROIT MEDICAL COLLEGE.

Sessions of 1876-77.

FACULTY.

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EDWARD W. JENKS, M.D., President, Professor of Medical and Surgical Diseases of Women and Obstetrics.

GEORGE P. ANDREWS, M.D., Professor of Principles and Practice of Medicine.

JAMES F. NOYES, M.D., Professor of Ophthalmology and Aural Surgery.

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LEARTUS CONNOR, M.D., Secretary, Professor of Physiology and Clinical Medicine.

RECITATION SESSION.

H. O. WALKER, M.D., Lecturer on Genito-Urinary System and Rectum.

DANIEL LAFERTE, M.D., (Demonstrator of Anatomy) and Lecturer on Orthopædic Surgery and Tumours.

J. G. JOHNSON, M.D., Lecturer on Diseases of Mind and Nervous System.

DAVID INGLIS, M.D., Lecturer on Histology, Curator of Museum and Librarian.

J. H. CARSTENS, M.D., Lecturer on Differential Diagnosis.

E. L. SHURLY, M.D., Lecturer on Diseases of Throat and Lungs.

F. A. SPALDING, M.D., Lecturer on Diseases of Skin.

C. C. YEMANS, M.D., Lecturer on Chemistry.

The Collegiate Year is divided into three sessions.

PRELIMINARY SESSION opens Wednesday, September 6th, 1876, and continues one month. The Clinics are held and the Lectures delivered by the Professors of the regular Faculty, and in the same order and frequency as during the Winter Term. Opportunity is given to dissect or work in the Chemical Laboratory.

THE REGULAR SESSION opens Wednesday, October 4th, 1876, and continues five months. During this term all the branches of *General Medicine* and *Surgery*, both scientific and practical, are taught with care and thoroughness. All students are daily examined on the subjects of the lectures and on their dissecting and laboratory work.

Senior students have *daily practice* in the art of examining patients, in forming their own diagnosis, prognosis, and treatment. As this is done under the direction of the professor holding each clinic, and in the presence of the class, it constitutes an invaluable course of training.

The RECITATION SESSION begins second Wednesday in March, 1877, and continues four months. Daily during this term there will be held a lecture, recitation, and one or two clinics. The lectures will be upon special subjects of medical or surgical interest.

The recitations will embrace the general subjects of the Regular Session, viz., Anatomy, Surgery, Midwifery, Diseases of Women, Physiology, Practice of Medicine, Materia Medica, and Chemistry.

Though the Recitation and Preliminary Sessions are optional, it is hoped that all who can will avail themselves of their manifest advantages in supplementing the regular winter course.

Three Hospitals—Harper's, St. Mary's, and St. Luke's—with two large free dispensaries, afford an abundance of clinical material for illustrative and practical teaching.

All lectures are delivered on Hospital grounds. The *peculiar feature* of this school is the *intimate union* between its *laboratory*, *clinical*, and *didactic* instruction.

FEES.—For Preliminary and Regular Sessions: Matriculation \$5. Hospital Fees (good for one year), \$10. Lecture Fees, \$40. Graduation, \$25. Lecture fees to third course students, \$25.

For the Recitation Term the Lecture fees are \$10, to those who attend the other courses. All others are required to matriculate and take out the Hospital tickets.

All fees payable in advance to the *Secretary*.

Board and Rooms can be obtained at low rates—according to accommodations—from \$3 to \$5 per week. Announcement and Catalogue, or any further information which may be desired, can be promptly obtained by addressing

LEARTUS CONNOR, M.D., *Secretary*,
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THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR OCTOBER 1876.

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TO READERS AND CORRESPONDENTS.

All communications intended for insertion in the Original Department of this Journal are only received for consideration with the distinct understanding that they are sent for publication to this Journal alone, and that abstracts of them shall only appear elsewhere subsequently, and with due credit. Gentlemen favouring us with their communications are considered to be bound in honour to a strict observance of this understanding.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

We must again ask the indulgence of our contributors. Although sixteen pages have been added to the present number, we have been compelled, by want of space, to postpone the publication of several communications, some of which are actually in type.

The following works have been received :—

Ueber den von Hammond Athetose genannten Symptomencomplex. Von Dr. MARTIN BERNHARDT, Privatdocenten zu Berlin.

Syphilis. Von CHRISTIAN BÄUMLER, M.D.

Della Bilharzia Hæmatobia. Dal Dott Prosperino Sonsino. Firenze, 1876.

Chirurgie Antiseptique Principes, modes d'Application et Résultats du Pansement de Lister. Par le Dr. JUST LUCAS-CHAMPIONNIÈRE, Chirurgien des Hôpitaux. Paris: J. B. Baillière et Fils, 1876.

Memoires sur la Galvanocaustique Thermique par le Docteur A. AMUSSAT, Fils. Paris: Germer Baillière, 1876.

Des Sondes a Demeure et du Conducteur en Baleine. Par le Docteur A. AMUSSAT.

De l'Exstrophie de la Vessie envisagée spécialement au point de vue du Traitement Chirurgical. Thèse pour le Doctorat en Médecine présentée et soutenue par Rodolfo Valdivieso, Ancien Interne des Hôpitaux de Philadelphie. Paris: A. Parent, 1876.

Catalogue of the Models of Diseases of the Skin in the Museum of Guy's Hospital. By C. HILTON FAGGE, M.D., Curator, etc. London: J. & A. Churchill, 1876.

The Liverpool and Manchester Medical and Surgical Reports, 1876. Manchester: J. E. Cornish, 1876.

On Port-Wine-Mark and its Obliteration without Scar. By BALMANNO SQUIRE, M.B. Lond. London: J. & A. Churchill, 1876.

On Secondary Hemorrhage, owing to Ulceration of the Popliteal Artery by a Sequestrum. By EDWARD W. COLLINS, M.D. Dublin, 1876.

Report of the Foochow Medical Missionary Hospital in connection with the A. B. C. F. M. Mission, June 1, 1876.

The Arrow Poison of the Ainos. By STUART ELDRIDGE, M.D., late Surgeon-in-Chief, Northern District of Japan. Yokohama.

Constitution, by-Laws, and Code of Ethics of the Medical Society of Yokohama, Japan. Yokohama, 1876.

A Practical Treatise on Diseases of the Eye. By ROBERT BRUDENELL CARTER, F.R.C.S., Ophthalmic Surgeon to St. George's Hospital, etc. Edited, with Additions and Test-Types, by JOHN GREEN, M.D. Philadelphia: Henry C. Lea, 1876.

A Manual of Percussion and Auscultation; of the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism. By AUSTIN FLINT, M.D., Prof. of Principles and Practice of Medicine and of Clinical Med., in Bellevue Hospital Medical Coll., etc. Philadelphia: Henry C. Lea, 1876.

A Treatise on the Science and Practice of Midwifery. By W. S. PLAYFAIR, M.D., F.R.C.P., Prof. of Obstetric Med. in King's College, etc. Philadelphia: Henry C. Lea, 1876.

A Practical Treatise on the Diseases, Injuries, and Malformations of the Urinary Bladder, the Prostate Gland, and the Urethra. By SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Prof. of Surgery in the Jefferson Med. Coll. of Phila. Third edition, revised and edited by Samuel W. Gross, A.M., M.D., Surgeon to the Philadelphia Hospital. Philadelphia: Henry C. Lea, 1876.

Illustrations of Clinical Surgery. By JONATHAN HUTCHINSON, F.R.C.S. Fasciculus IV. Philadelphia: Lindsay & Blakiston, 1876.

A Manual of Midwifery. By ALFRED MEADOWS, M.D. Lond., F.R.C.P., Physician Accoucheur to St. Mary's Hospital. 2d American from 3d London edition, revised and enlarged. Philadelphia: Lindsay & Blakiston, 1876.

The Theory and Practice of Medicine. By FREDERICK T. ROBERTS, M.D., Assist. Phys. and Assist. Teacher of Clin. Med. at Univ. Coll. Hosp. Second Am. from last London edition, revised and enlarged. Philadelphia: Lindsay & Blakiston, 1876.

On Tracheotomy, especially in relation to Diseases of the Larynx and Trachea. By W. PUGIN THORNTON, Surgeon to Hospital for Diseases of Throat. Philadelphia: Lindsay & Blakiston, 1876.

Studies, Chiefly Clinical, in the Non-Emetic Use of Ipecacuanha. With a Contribution to the Therapeutics of Cholera. By ALFRED A. WOODHULL, M.D., Assist. Surgeon U. S. A. Philadelphia: J. B. Lippincott & Co., 1876.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. VON ZIEMSSSEN. Vol. XI. Diseases of the Peripheral Cerebro-Spinal Nerves. By Prof. WILHELM HEINRICH ERB, of Heidelberg. Translated by Mr. Henry Power, of London. Albert H. Buck, M.D., New York, editor of Am. ed. New York: William Wood & Co., 1876.

What is the Best Treatment in Contracted Pelves? By ISAAC E. TAYLOR, M.D. New York, 1876.

A Practical Treatise on Materia Medica and Therapeutics. By ROBERTS BARTHOLOW, M.A., M.D., Prof. of Theory and Prac. of Med. and of Clin. Med. in Med. Coll. of Ohio, etc. New York: D. Appleton & Co., 1876.

Hay Fever, or Summer Catarrh; its Nature and Treatment. By GEORGE M. BEARD, A.M., M.D. New York: Harper & Brothers, 1876.

A Contribution to the Treatment of Uterine Versions and Flexions. By EPHRAIM CUTTER, M.D. Second edition, entirely rewritten. Boston: Jas. Campbell, 1876.

Micro-Photographs in Histology. By CARL SEILER, M.D., in conjunction with J. Gibbons Hunt, M.D., and Joseph G. Richardson, M.D., Nos. 1, 2, 4. Philadelphia: J. H. Coates & Co., 1876.

A Contribution to the Study of the Transmission of Syphilis. By R. W. TAYLOR, M.D. New York, 1876.

Yellow Fever and Malarial Diseases. By GREENSVILLE DOWELL, M.D. Philadelphia, 1876.

Specialists and Specialties in Medicine. By M. H. HENRY, M.D. N. Y., 1876.

Vaccination as a Preventive of Smallpox. By W. C. CHAPMAN, M.D. Toledo, 1876.

Sulphate of Cinchonidia. By J. W. COMPTON, M.D. Paducah, Ky., 1876.

The Gathering, Packing, Transportation, and Sale of Fish, Vegetables, and Fruits. By SAMUEL C. BUSEY, M.D. Cambridge, 1876.

Mania Transitoria. By EUGENE GRISSOM, M.D. Raleigh, 1876.

The Forceps in Breech Deliveries, with a Description of a New Instrument. By A. J. MILES, M.D. Cincinnati, 1876.

Laws of the State of Michigan relating to the Public Health. Lansing, 1876.

Constitution and By-Laws of the New York Academy of Medicine. August, 1876. New York, 1876.

Remarks on Intra-Uterine Polypi. By A. REEVES JACKSON, M.D. Chicago, 1876.

Report on the Ventilation of the House of Representatives and of the South Wing of the Capitol of the United States. By ROBERT BRIGGS, C. E., Philadelphia. Philadelphia, 1876.

A Sketch of the Life and Writings of Louyse Bourgeois, Midwife to Marie de Medici, the Queen of Henry IV. of France. By WILLIAM GOODELL, A.M., M.D. Philadelphia, 1876.

Report on the Registration of Prevalent Diseases. By F. W. DRAPER, M.D., of Boston. Boston, 1876.

The Cause of Rotation in Lateral Curvature of the Spine. By A. B. JUDSON, A.M. M.D. New York, 1876.

Thirty-seven Operations of Thoracentesis by Pneumatic Aspiration. By FRANK DONALDSON, M.D. Baltimore, 1876.

On the successful Treatment of some Forms of Peripheral Paralysis. By JOHN VAN BIBBER, M.D. Baltimore, 1876.

Analysis of 600 Cases of Skin Disease, with Cases and Remarks on Treatment. By L. DUNCAN BULKLEY, M.D. New York, 1876.

On some Disputed Points in Physiological Optics. By HENRY HARTSHORNE.

An Analysis of a few Cases of Abdominal Disease. By W. C. VAN BIBBER, M.D. Baltimore, 1876.

Gastrotomy and Gastrostomy. By J. H. POOLEY, M.D., Prof. of Surgery, Starling Med. Coll., Columbus, Ohio. Columbus, 1876.

Neurotic Purpura. By GERRARD G. TYRRELL. San Francisco, 1876.

Orthopedic Surgery; Deformities of the Lower Extremities. By VAN S. LINDSLEY, M.D.

The Climatotherapy of, and the American Mountain Sanitarium for Consumption. By STANFORD E. CHAILLÉ, M.D. Baltimore, 1876.

Western North Carolina as a Health Resort. By W. GLEITSMANN, M.D. Baltimore, 1876.

On a New Apparatus for Fractures of the Leg. By OSCAR J. COSKEY.

A Plea for Principles and Conservatism in the Treatment of Diseases Peculiar to Females, embracing the Report of a Case of Superinduced Pseudo-cyesis, with results. By WM. ABRAM LOVE, M.D. Atlanta, 1876.

Medical Schools and their Relations to the Profession. By JOEL W. SMITH, M.D. Charles City, 1876.

Some Points on the Pathology and Treatment of Cholera Infantum. By EDWARD WALDO EMERSON, M.D., of Concord, Massachusetts.

Report on Medical Education made to Med. Society of California. By JOS. F. MONTGOMERY, M.D. Sacramento, 1876.

On Abscesses in the Lower Abdominal Cavity and its Parietes. By GURDON BUCK, M.D. New York, 1876.

Two Cases of Ovariectomy. By R. A. KINLOCH, M.D.

The Spectroscope, its Value in Medical Science. By GEORGE R. FOWLER, M.D. New York, 1876.

The Collateral Circulation in Aneurism. Report of the Successful Ligation of the Innominate, the Common Carotid, the Vertebral, and the Internal Mammary Arteries in a case of Right Subclavian Aneurism. By A. W. SMYTH, M.D., House Surgeon Charity Hospital. New Orleans, 1876.

Report on Vaccination. By Wm. B. DAVIS, M.D. Cincinnati, 1876.

On Stricture of the Male Urethra, its Radical Cure. By FESSENDEN N. OTIS, M.D. New York, 1875.

A Clinical Lecture on the Use of Plastic Dressing in Fractures of Lower Extremity. By D. W. YANDELL, M.D. Indianapolis, 1876.

A Clinical Lecture on the Treatment of Incipient Stricture by Otis's Operation. By MR. BERKELEY HILL, Prof. of Clin. Surg. in Univ. Coll., London. Together with Explanatory Remarks on the Treatment of Stricture and Gleet. By FESSENDEN N. OTIS, M.D.

Chorea: its Cause and Treatment. By GEORGE T. STEVENS, M.D. Albany, New York, 1876.

An Address on some of the Leading Public Health Questions; with Remarks on the Extent of Swamp Lands in the United States, and their Reclamation as a Sanitary and Economic Measure. By J. M. TONER, M.D. Cambridge, 1876.

Transactions of Medico-Chirurgical Faculty of Maryland, 1876. Baltimore, 1876.

Proceedings of the Connecticut Medical Society, New Haven, May 1876.

Transactions of the South Carolina Medical Association. Annual Session, 1876.

Transactions of Medical Association of State of Missouri, 1876. St. Louis, 1876.

Transactions of the Medical Association of the State of Alabama. Session 1876.

Transactions of the Medical Society of New Jersey, 1876.

Transactions of Medical Society of California, 1875-6. Sacramento, 1876.

Transactions of New York Academy of Medicine. Second Series, Vol. II. New York, 1876.

Transactions of the College of Physicians of Philadelphia. Third Series, Vol. the Second. Philadelphia, 1876.

Proceedings of the New York Academy of Medicine, May 20, 1875.

Proceedings of the Medical Society of the County of Kings, Brooklyn, New York. July, August, September, 1876.

Proceedings of Academy of Natural Sciences of Phila. January to May, 1876.

Michigan State Medical Society. Address of the President, Dr. WM. BRODIE, Detroit.

Address by Prof. COLLIER, Burlington, 1876.

Address by J. W. SINGLETON, M.D., of Paducah. Louisville, 1876.

Report of the State Lunatic Asylum. Utica, N. Y., 1875. Albany, 1876.
Report of the Board of Health of the City of Boston, 1876. Boston.

The following Journals have been received in exchange:—

Deutsches Archiv für Klinische Medicin. Bd. XVIII., Heft 1.
Archiv der Heilkunde, Bd. XVII. Heft 5.
Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin, 1876. Nos. 1, 2.
Centralblatt für die Medicinische Wissenschaften. Nos. 22 to 36. 1876.
Allgemeine Wiener Medizinische Zeitung. Nos. 23 to 35. 1876.
Deutsche Medicinische Wochenschrift. Nos. 21 to 35. 1876.
Nordiskt Medicinskt Arkiv. Bd. VIII., Heft 1.
Bibliothek for Læger. VI., 3.
Upsala Läkareförenings Förhandlingar. Bd. XI., Nos. 6, 7, 8.
Annali Universali di Medicina e Chirurgia. Maggio, 1876.
L'Imparziale. Nos. 12 to 17. 1876.
Lo Sperimentale. Nov. 1875. Febbraio to Augusto.
O Correio Medico de Lisboa. Nos. 13 to 23. 1876.
Archives Générales de Médecine. July, Aug., Sept., 1876.
Annales de Dermatologie et de Syphilographie. Tome VII. Nos. 4, 5. 1876.
Annales des Maladies de l'Oreille et du Larynx. Juillet, 1876.
Revue des Sciences Médicales en France et a l'Etranger. Juillet, 1876.
Gazette Hebdomadaire de Médecine et de Chirurgie. Nos. 24 to 35. 1876.
L'Union Médicale. Nos. 69 to 107. 1876.
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ART. I.—*On Functional Spasms.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences. (With four illustrations.)

I SHOULD scarcely have thought it worth while to recall attention to the obscure subject of functional spasms and its near clinical relatives were it not that, in some of the most annoying and seemingly hopeless cases, I have been able to give so much relief as to enable the sufferer to resume his place among the active. Yet, besides this, some of the forms of spasm which I shall describe under this name are not as yet fully recognized, or are seen so rarely in every-day practice, as to be looked upon as mere curiosities, or as utterly beyond therapeutic help.

Duchenne de Boulogne, in the second edition of his great work on Electro-therapeutics, has given the name of functional spasm to "an affection characterized by pathological contractions, painful or not, but manifested only during the exercise of certain voluntary or instinctive movements."

He gives first the classical illustration of the various forms of writers' cramp, and others in which the biceps and deltoid contracted painfully when the hand was used. Then he refers to the spastic disorders of shoemakers, tailors, etc., and to the case of a fencing master, who had contractions of various muscles when employing them in the habitual acts of his business. A large number of such examples might be cited from this author and from others.

Putting aside these well-known instances, I desire to call attention to a class of cases which, although nearly related to those just mentioned, differ from them in several most important particulars. They consist of three distinct classes :—

First, those in which the functional activity of a muscle or set of muscles gives rise at times to an exaggeration of the motions involved naturally, and sometimes also to more or less spasmodic activity in remoter groups.

Second, those in which the functional action of one group results only in sudden and possibly in prolonged spasmodic acts, tonic or clonic, in remote groups of muscles not implicated in the original movement.

Third, those in which standing or walking occasions general and disorderly motions, affecting the limbs, trunk, and face, and giving rise to a general and uncontrollable spasm without loss of consciousness.

The first group is, to my mind, one of the most curious. The pure instances, that is, those in which a normal motion is liable to become excessive, are rare. Some cases of writers' cramp nearly fulfil the conditions; but here pain or sense of fatigue is often, nay usually, super-added, and the overaction is not merely excess, but involves inco-ordination almost inevitably.

I mean, therefore, that there exists a set of rare cases in which the motor act becomes suddenly exaggerated.

The result may be temporary, as in the following history of a man who came under my care some years ago:—

He was engaged in the manufacture of watches, and had in it some work which required him to be constantly picking up and adjusting tiny screws. When I saw him, he had been thirty years at this labour. His general health was faultless; but within two years he had acquired a strange peculiarity which made it impossible to do any steady work. When I began to question him as to this matter, he said, let me show you, and asked leave to pour out some sugar-coated pills which were in a phial on my table. He then began to pick them up, which he did easily. Then he said, these are too large, and at last took a wooden match and broke it into small bits, which he put on the table. As he picked these up he stopped at the third one, and said, there it is locked at last. I found that the forefinger and thumb were, as he truly said, locked on the morsel of wood. I forced them open with great difficulty, and was surprised to find the spasm stronger than his normal power in the same parts. This locking took place ten or twelve times a day, and was apt to last from ten to thirty minutes. He would succeed usually in pulling out the imprisoned screw with a loop of twine, but its release did not end the spasm, and very often the screw cut his fingers. Of late, the trouble began to show itself in turning the pages of a book, when at times the finger and thumb would close with violence, and the page be torn. He made the interesting observation that the spasm came soon if he put himself in his habitual attitude when at work, but that it was long delayed if he stood when at his labour.

This was the best case I recall of pure spasmodic increase of a normal act. It involved no pain, and only at times caused slight tremor, as extreme muscular exertion is apt to do in many persons. The moment the spasm was over he could at once pick up a screw and continue to work.

This man had a varied experience in treatment, to mention which in detail would be to name almost every potent drug at our disposal. I used several means to lessen the sensitiveness of the skin of the affected fingers, thinking it possible that the beginning of mischief lay there. Afterwards, at his earnest desire, I used various electrical treatment, in which in such cases I have little faith. All alike failed, and the record was much like that of writers' cramp. Nothing but rest aided him, and he finally left the city to reside on a farm in the country.

As we all know, many trades are liable to cramp of the over-used muscles, as in the hammer palsy described by Duchenne. The calf cramp of the turner in wood or metal. These are usually brief and painful. But sometimes they are of the nature of what I may call, as it is a truthfully descriptive phrase, *lock spasm*, a permanent or lasting painless spasm, of which this is a good example:—

A sawyer, æt. about 40, temperate and healthy, was seized at the end of a long, hot day's work with a sudden spasm of the biceps. The saw, drawn back to prepare for the downward motion, was arrested. He ceased work and went home. His wife said he had a "cold stroke," his doctor that he had a heat stroke, but at all events the biceps only gave way during the sleep of the night which followed. After the spasm had returned many times he came to me one morning with an attack in full force. After the first they came back at long intervals, but these soon grew less, and when I saw him the spasms took place once a day, rarely twice, nor could their length be predicted. The arm I saw was locked in the extreme of a spasm so violent that no effort I could make relaxed it, although I made efforts which it seemed to me might endanger the bones. On a second visit I walked with the patient to a grocer's near by, and there got the man to bend over so as to bring the forearm horizontal. Then I attached a scale-pan to the wrist by a broad band, while he stood bent with his other hand on a chair seat. Then I weighted the scale-pan until, after it had held eighty pounds for five minutes, the arm began to extend, and at last suddenly gave way. This spasm did not return on removal of the weight, but I got no permanent therapeutic use out of the suggestion this gave me. The enormous amount of force generated to sustain eighty pounds at the end of a lever as disadvantageously situated in regard to its fulcrum and to its active mover as the forearm is in relation to its joint and to the biceps, suggests some interesting reflections. Yet the power here wasted is slight as compared with that evolved to sustain the years of spasm in some cases of hysteria.

In the case I have briefly related, I think that good was done by the use of the induction current; one pole was put on the outside of the biceps below and one on the belly above, and the strongest endurable current was passed through it for two hours once a day, and whenever the spasm took place. After a time I also used hypodermic injections of atropia into the belly of the muscle, a treatment for spasm much employed with my colleagues Drs. Morehouse, Keen, and myself, in 1862, while in charge of the U. S. A. Hospital for Diseases and Injuries of the

Nervous System.¹ The same means are still in frequent use at the Philadelphia Infirmary for Nervous Diseases. These two means were, I think, of value, because the spasms became by degrees less, and after several months ceased; a very unusual result of treatment, if it was a result, in these forms of spasm.

The third case of tonic spasm which I shall place beside those already given must owe what details I can give to my remembrance, as the notes are mislaid.

The sufferer was an officer in rugged health when shot through the forearm and arm at the same moment, and just as he was drawing his sword. He felt a shock, but was more conscious of the fact that he could not release his sword-hilt from his grasp. At last he took hold of the fingers with his left hand, and opened them. This is a not rare incident of arm wounds, and had, I think, no near relation to what followed. The wounds partially divided both the median and musculo-spiral nerves, and he endured many months of torment with *causalgia* (burning pain) in the palm. At last he got well, and at the close of the war came to me for the trouble I shall now describe. At times when holding anything in the grip of the right hand, he would have a sharp pain where the median divides in the palm, and instantly the flexors would violently close the hand. The spasm would endure for two to ten minutes, and then relax. I have seen his palm cut by the violence with which the nails were driven into it. The initial pain left as the spasm began, and the spasm was not of itself painful. He believed that it was caused by pressure on a tender spot in the palm, but I never could cause it by direct pressure. The median branchings in the palm were certainly tender, and I therefore desired him to use the treatment by repeated blisters, which in the war and since I have found so valuable in many local nerve troubles. He used at least twelve blisters on the palm, with the result of ending, I think, altogether his annoying malady. I heard of him as well a year later.

In this last case there must have been a sensitized nerve region, from which the morbid impulse started. It was really a case of reflex influence, and was sometimes amusing in its consequences, because the victim never knew when the grasp would shut relentlessly on what the hand held.

These cases are, I suspect, excessively rare, as are also those in which a normal muscular act causes remote associated movements. The most familiar case is that of the lifting of a palsied arm during the act of yawning.² Histrionic spasm of the face also offers some odd illustrations, as in the case of Miss Inman, given by Marshall Hall. Here voluntary drawing down of the right angle of the mouth caused at once spastic closure of the right eye. This very curious case began with general tonic spasm of the right side of the face. He quotes from a French journal a

¹ Gunshot Wounds and other Injuries of Nerves, 1864, Mitchell, Morehouse, and Keen, p. 154.

² This act must have curious influence. I saw last year a case of slight strychnic poisoning, in which the act of yawning suspended the spasms.

still more notable case. It is too briefly described as a ball wound of the left side of the face. The wound healed easily, but whenever afterwards the man used the jaws in any way, to speak, to laugh, to chew, instantly the sublabial muscles passed into a state of violent spasm, producing the most hideous grimaces. The normal action of one muscular group evolved the abnormal response of another.

One of my own cases was as interesting. It belonged to the class of hypercineses, in which the spasms lie chiefly in the range of the spinal accessory and first cervical nerves.

R. L., æt. 45, a plumber, previously in good health, was hurt in Jan. 1862, by the fall of a cake of ice, which struck him on the back of the head and knocked him down. He suffered only from stiffness in the muscles at the back of the neck. This never quite left him, and within three months his head was slowly drawn more and more to the left. Then the convulsions appeared, and at brief intervals he had horrible spasms in the trapezius, sterno-cleido-mastoid, tracheloid, and spinatus muscles. Every minute, at least, the head was jerked backwards and twisted to left, the shoulders drawn up, and a storm of rapid but energetic spasms swept over the facial muscles.

He improved very much while taking gelseminum and bromides in full doses, so that at last the abnormal actions above described became really trifling. I believe they came back the year after, but in the interval he had a form of trouble which was painful to see. Whenever he began to chew food the submental muscles would jerk his mouth open, and so hold it until at last he would push it shut with his hand, and chew a little more before the spasm returned. When ready to swallow, his face presented a picture of terror. He would suddenly muster courage and swallow the contents of his mouth at a gulp. Then instantly the jaw flew open, the head was drawn back and down on the left shoulder, the face was convulsed, sweat broke from his forehead, and the attack was at an end. Sometimes, if he could bolt his food very quickly, he escaped the consequences. In this and the last case the muscles involved are really part of the muscle apparatus for chewing, speaking, etc., but have only a subsidiary part; still they belong, as to their activities, to nerves, other than the facial, and are in this sense remote.

I have since seen many cases of this form of spasm, and in nearly all the act of laughing, talking, but, above all, chew-

Fig. 1.



ing, seems to provoke the return of spasms. In one case the convulsive movement drew the head back, and bowed the spine, and passed off by a spasm of the gastrocnemial groups, so as to jerk him into a squatting posture. (See Fig. 1.)

These are hypercineses in which the spasms, usually active with or without apparent cause, are also brought on or increased by the functional activity of other muscle groups, allied or remote.

I have seen also certain spasmodic cases in which all of the abnormal phenomena were related to the physiological act of walking—I might define them as being exaggerations of walking. I have seen this disorder in various forms.

My first case was a chubby, ruddy little boy, aged six, from Tennessee. I could find neither in his own nor his parents' history any cause for his disease, save that it came on slowly after measles. When asked to walk, he exhibited this strange set of symptoms. The left leg was sound and acted well. As he swung the right forward, and lifted the toes to avoid touching the ground, there was first a sudden spasm of the tibial and peroneal muscles, so that the tip of the foot was jerked up too high. Instantly it seemed to relax, and the foot came down, but, as it touched the ground, and the second physiological act of rising on the ball of the foot began, this became extreme and spasmodic. The lad was lifted abruptly, and, the spasm of the gastrocnemii continuing, the leg was jerked up backwards—a true string-halt. I had never seen this before, and was much interested. While at rest on his back he moved the foot at will without annoyance or spasm, nor could I by a blow, or pressure, or tickling of the sole, cause him to repeat the movement.

In July, 1875, I saw at my clinic a case somewhat like the last, but with some important differences.

A delicate looking girl, *æt.* 7, with a good family history, and no cause to which I can trace her troubles of locomotion. She began to crawl at two years, and never walked till the fifth year, yet with this slowness to move there seemed to be no arrest of mental or moral development. The mother thought that she was gaining ground. When we stripped her I found that she had all the foot motions perfectly, save that of flexing the feet, which, when they got to a right angle with the leg, could move no further, the tendo Achillis refusing to yield. The other muscles above the knee were in that curious state which we find in some partial palsies in adults, and which Dr. Seguin has admirably described. It is a condition of rigidity which varies in degree in different cases. In this state, if you flex the leg on the thigh, the extensors, which should be passive slowly, and, as it were, reluctantly, yield and resist the flexion. If you extend the leg, the flexors act to resist in like fashion. Whatever motion be made, the opponent muscles contract, and every willed movement becomes tardy and difficult, or, in bad cases, impossible. When an attempt is made at passive motion, the muscles do not resist in jerks, but smoothly and evenly, so that it seems as if you were bending a stiff hinge or a bar of soft metal. In fact, so striking is this analogy, that at my clinic this state has come to be briefly described as the "lead-pipe leg." In the present case it was not extreme in degree. Voluntary movement

in walking curiously exaggerated the gastrocnemial spasm. Every time the foot came down the gastrocnemius muscles contracted violently, and so as to lift the child with a jerk on to the foot then in use. If the walk was rapid she walked continuously in this position. If she moved slowly the gastrocnemius only acted as she rose on the ball of the foot, the natural physiological act becoming excessive.

Here was then a slight but permanent tonic spasm of the calf muscles, yielding easily under ether, with a temporary functional spasm alternating in each leg as she used it in walking. After some reflection, Dr. T. G. Morton cut the tendons of the calf muscles on both feet, and, as a result, the muscles, in place of continuing to contract, relaxed, as the resistance ceased. The tendons were thus lengthened at least two inches, but ample power remained, and the walk was most satisfactorily improved. Fig. 2 represents this child walking rapidly. The upward jerk of the heel pitches the child forward, so that she hurries to overtake, as it were, her centre of gravity; while, also, to aid in preserving her balance, the belly is thrown out and the shoulders thrust back.

Fig. 2.



The next case is yet more curious.

R. C., æt. 17, a long, thin, sallow lad, from New Jersey, was brought to me in October, 1874. Healthy up to the age of nine, he had then measles, from which he recovered very slowly, and with marked feebleness of the legs. As time went on the power to use them increased, but by degrees there came upon him a certain stiffness, which extremely embarrassed him in all his movements. At the time I saw him his legs were equally developed, except that just above the left knee the thigh muscles were somewhat wasted. While in bed at rest the legs were quiet. When he stood up the spinal erectors became extremely rigid, and threw the back into a bow, while a strong effort of will was needed to keep the left leg quiet, and sometimes, the effort being insufficient, it was jerked upwards. When seated he kept the leg still by crossing over it the more manageable right leg. When he walked each leg in turn was jerked up by the gastrocnemii, so as to constitute a string-halt, which, as he was swayed to right or left, and bent back by the alternating activity of the spinal erectors, caused him to present a most curious appearance. Fig. 3 represents him just as he came to a stand after rapid walking, when the spine was bent forward, the belly thrust out, the legs bent, and the lad balancing on the ball of the right foot, with the left leg jerked up at a right angle.

At first I felt indisposed to attempt any treatment of this puzzling case. Various electrical treatment was tried and failed, such as induction currents

Fig. 3.



to the antagonist muscles, or long-continued induction currents to weary the spasmodically acting muscles and Remak's rapid alternatives.

A long series of atropia injections into the calf muscles met with more success, and the action of these muscles became distinctly less powerful and less troublesome. Next I weakened the back muscles by a series of repeated cross sections at different levels; and finally I put on him an apparatus which limited the extent to which the over-active muscles could move the various parts of the limbs. I did not cure him, but I most certainly did remarkably better his condition, and enabled him to rise, stand, and walk with far less fatigue and effort.

The last two of the cases I have here given involve spasm or increased spasm in groups of muscles accustomed to act together in order to secure equilibrium when standing, or to aid in the movements of progression. The cases first given were also examples of voluntary action bringing on or increasing spasm elsewhere, but, save in the case of yawning, and the consentaneous arm lifting which it causes in some hemiplegias, the muscles which contracted convulsively were not remote from those whose activity seemed to call them into morbid motion. But in the case which I shall now present, the most prominent feature was the fact that every or almost every voluntary motion

caused extraordinary changes of or increase in the amount of the spasm, and this was the case whether the patient was prone or erect.

R. C., æt. 33, watchcase-maker, married, and has healthy children; no syphilis. His family history is bad; a sister, two aunts, and his mother have had palsies in middle life; an uncle had epilepsy, and a cousin dementia. He was always nervous and excitable, used no spirits, smoked moderately, and was always well until the summer of 1865, when he was two days unconscious from sunstroke, and has ever since been made weak by the heat of summer. About two years ago, in the summer of 1874, he

observed that while walking the legs felt weak, and he was obliged to stop, as if to regain power; after which the right leg would drag for a time. At the same time he began to have pain in the back of the neck and lumbar spine. These pains continue. In January, 1875, he noticed a slight but increasing tremor in the left arm, and in two or three months the strange condition which I shall try to describe.

When I first saw Mr. C. he was a healthy-looking man, of unusual intelligence, and marvellously patient under his great suffering. In sleep there was no movement; when he awakened he was conscious of the left hand being rigidly closed. In a few moments it began to twitch, the fingers moving as do those of a violin player. The slightest movement of any other limb, speaking, or eating—even if he be fed—causes the left arm to execute a constant motion of striking the bed or his side, the limb being the while extended. When he arose and walked, this action became more violent, and so much resembled the steady, rapid movement of a pendulum, that I spoke of it at once to my assistants as a case of what might be called, descriptively, *pendulum spasms*. In fact, its rhythmic regularity was astonishing. Dr. Sinkler timed it, on one occasion, as 157; and on several others I found it always exactly 160. It was as accurate as the heart in its motion, but certain things always increased either the power or the number of the motions. Thus if he stood up, having been seated, the number did not alter, but the force of the blow on the thigh increased remarkably.

If, while standing, he elevated and extended the right hand and arm to the shoulder level, instantly the rhythm mounted to 200; and when the right arm ceased to act, the number fell again speedily to 160.

When there was no pendulum spasm he could perform with the left arm any voluntary act not involving the hand, which itself never ceased to twitch; but while the swinging spasms lasted he could execute no volitional act, and the effort to move the limb enormously increased the spasms.

Excitement and emotion, and all forms of electricity, added to the force of the motions, but voluntary movements of other limbs increased the number more than the force. Attempts at passive motion, as the effort to fully extend the partially flexed fingers, cause intense pain in the occiput, just as the effort to overcome rigid gastrocnemii in certain cases gives rise to pain in the dorsal spine. He has power to stop the spasms by certain manœuvres. If he seizes the left hand with the right, and, flexing the left arm, holds it, there is a kind of general spasm; the left hand for a moment seems to struggle with increasing violence; he totters; the face is convulsed; there is horrible pain in the back of the head. Then he gently releases the left arm, which, save for a slight tremor or twitching of the unquiet fingers, remains at rest, and may not move in violent spasm for an hour or more, and is sometimes nearly still for twelve hours.

He avoids the use of one hand to stop the other, because of the great pain it causes in the head. When he stops the hand with his leg, he has little head pain, but it is altogether so unpleasant for him to check it that he rarely does so. When standing, if he wishes to stop the pendulum spasm, he throws the left leg back so as to trip the toe; the arm then falls in as it moves, and he brings the leg forward so as to catch the arm against the thigh, where its own spasm holds it. Then there is a general convulsive movement of the entire body, and the limb is at rest.

When the arm is hanging quiet at his side, it begins to move if he

walks a few steps, or if he lifts the right arm, in which at times—especially after sudden arrest of the spasm—I noticed some large tremor.

In all of this strange set of symptoms there is no loss of consciousness, no anæsthesia, no ocular trouble or spasm, no aural defect. When he walks long or fast, the legs have some disposition to become rigid; but this is an inconstant feature.

This patient is now under care of my colleague, Dr. Sinkler, to whom I am in debt for liberty to use his case. So far, nothing has been of any service.

There are several points of great interest about this notable case. No other is so good an illustration of the product of clonic spasm through remote voluntary activity. Also the mode of arrest is curious, and I should have added, in describing it, that a bystander can stop the spasms by securely holding the arm for a few moments, when the usual general contortions occur, and the limb ceases to move. Voluntary motions of remote parts—of any remote parts—set the spasms going. Forceful arrest of the spasmodic swing of the arm seems to cause a discharge of nerve force from numerous nerve centres, and so gives rise to a momentary generalized spasm. This last fact finds analogies in some spinal scleroses, and in some clonic local spasms, the arrest of which occasions remote or morbid activities.

I saw, in the war, a soldier who had a constant *see-saw spasm* of the left foot, caused by a nerve wound of the sciatic. The flexors and extensors acted by turns, so as to keep the foot in constant motion. When I held it firmly, he was seized at once with a general left-lateral convulsion, in which the face moved but slightly, without ocular spasm or loss of consciousness, but with occipital pain. As soon as the foot was released, the other motions ceased. Sensibility was impaired from the peripheral lesion.

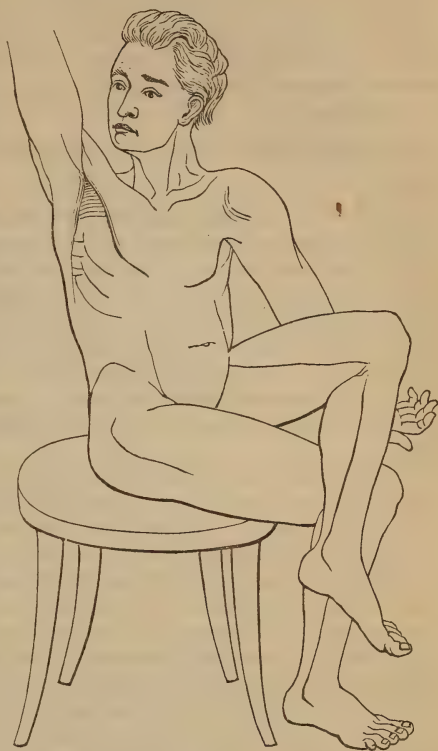
In the case of Col. P., described at p. 364 of my book on Nerve Injuries, there was a continual irregular threshing motion of an arm stump, which ceased for a time, when the stump was exercised in voluntary movement, but which extended over a large region of the same side (right) with sense of discomfort in the head if an attempt was made to hold the agitated stump. These peculiarities seem to me worthy of note in cases so obscure, and the history of which has been thus far imperfect, because we are without post-mortem results or interpretations.

There is yet another group of cases, happily most rare, in which, while the patient is at rest prone, or as in one case seated, no spasms exist; but when the upright posture is assumed, at once the patient is seized with general convulsive motions, which may or may not persist. Of such a disorder I have seen three cases.

The first and most singular was that of a journeyman tailor, about 28 years old, a man of lean make, and very anæmic. He had been guilty of no excesses, and had not had syphilis. His secretions were normal, and

his organs, to appearance, healthy. He had, however, worked hard in the cross-legged position which tailors assume, and had been constantly sewing late into the night. This was all that could be learned of his history.

Fig. 4.



When this man was seated or on his back, he could make every possible movement, slowly or as abruptly as he pleased. If he got up from his bed or a chair slowly and watchfully, and then stood still a moment, he could walk away as well as any one; but if he jumped up suddenly from the prone or the sitting posture, he was seized as by a spell with a convulsive attack, in which his head became giddy, but in which there did not seem to be the least loss of consciousness. The attitude assumed as he made a sudden attempt to get up hastily is difficult to describe, but figure 4 conveys a clearer idea of it than words will give. The right leg bent at the knee, the left was thrown over it, and grasped it in violent flexion.

The body was twisted to the right, and the head also, while the right arm in extension was raised, and the left thrown outwards and backwards in extreme pronation. Then there was a general writhing of the whole frame, the face muscles twitching here and there, and with a groan of relief his attack was over.

Much pains were spent to learn if there was in this case any chance of explanation which would involve a suspicion of simulation. His malady, however, was very constant in its peculiarities. It had come on gradually, beginning with slight contortions; it made him unpopular in the work room, where it was looked upon as some kind of possession; nor had he anything to gain by malingering, while his face had always that look of gloom and melancholy which such a torment as his would be apt to inflict on a person of sensitive temperament.

Dr. C. Handfield Jones¹ briefly calls attention to cases in which spasms occur owing to the weight of the body being brought upon the feet.

He mentions that Bamberger relates the case of a youth æt. 19, convalescent from pneumonia, who had spasms of the legs when he touched the

¹ Functional Nervous Disorders, p. 398.

ground with his feet. There was tetanic rigidity, interrupted by violent sudden contractions, which increased in intensity. He says, also, the face was flushed and distorted, but that all movements ceased when the lad lay down. If, while lying, the soles of his feet were pressed, the same phenomena appeared, but with less intensity. He was cured by sedatives and cold affusion.

Bamberger's case is somewhat like the following, which I saw two years ago :—

A lad, æt. 7, of rosy tints and well nourished, had, when a year old, a sudden convulsion, and, soon after, a succession of fits, followed by several days of unconsciousness. His previous health was good ; his family record unimpeachable. When three years old he began to creep, but showed no desire to stand or walk. Long and industrious efforts were made to induce him to stand, but he always drew his legs up and sunk down. For a long while this was regarded as due to feebleness. By and by, however, despite the motions just mentioned, he would maintain himself erect, or partly so, and by the aid, for the most part, of his vigorously developed arms.

When I saw him I was struck with the child's intelligence, with his general look of health, and with the perfect use he had of all his members while lying down. Neither when he crawled could I see any failure of power or co-ordinating capacity in the legs.

After I had gone over his case with care, his parents placed him on his feet. I find it impossible to describe the confusion of motions which at once ensued. They seemed to me made up of choreoid movements of the hands, feet, and face, with pretty violent alternate spasms of the flexors and extensors of the legs and arms, with strange rotatory twistings of the spine and neck. His face looked anxious, but twitched very little. When put on his back every motion ceased at once. Pressure on the soles did not cause spasm. When held up by the arms or by the shoulders he had no spasms, but as soon as the feet were on the floor and he tried to stand, the storm of convulsive motions swept over him. The effort of standing seemed to be needed to cause the result. If he tried to walk he was thrown down by the spasms, and therefore did nothing but creep.

Electricity did not cause in him any spasms. The leg muscles responded well to a moderate induction current. There was no disturbance of sensation anywhere. When his soles were tickled he drew them up a little jerkily, but with no spasm.

I regret that this interesting case was seen by me but twice, and that my notes of it are not more ample. His parents, when once they learned that I did not regard the case as hopeful, were indisposed to give much information about it, and seemed to fear that the poor little fellow would be looked upon as a medical curiosity.

I believe I shall have done a good service by directing attention to the fact that voluntary motion may give rise to various forms of spasm. It is familiar enough that morbid sensations may do so, or that in an over-excited state of motor centres, a normal sensation may occasion like results, as in tetanus. As regards the cases to which I have here called attention, two explanations lie open to us. Voluntary acts give rise to spasms in the

muscle willed to move, or in remote groups of muscles. There is at times an unusual discharge of nerve-force in some of these cases, as in the "lock spasms" I have reported, or else the muscle itself has become the means by its over-use of hypersensitizing the sensory centre which takes record of its activities, so that from this centre at times excito-motor impressions are radiated on to near or remote centres, and result thus in spasms. It will be found, in all of these cases, that when an ordinary functional motor act gives rise to spasms elsewhere, these occur in muscles which have physiological and therefore anatomical relations to the muscles which, by their normal use, gave rise to the morbid activities. Thus, the face muscles are physiologically allied, and so volitional movements of one of them may cause spasms in others. The motion of one arm starts spasms in the other; and walking, which involves naturally the swinging of the arms, has a like potency. Why talking or chewing should do the same is less clear, but such morbid relationships have analogues in the cases of neuralgia, where the long irritation of one centre results at last in the like disturbance of remoter sensory centres and in radiated neuralgias which are usually of unilateral relationship.

ART. II.—*Genital Irritation as a Cause of Nervous Disease, with reference more particularly to a new form of Muscular Spasm of the Flexors of the Lower Extremities, met with in Young Children.* By ALLAN McLANE HAMILTON, M.D., Visiting Physician to the Epileptic and Paralytic Hospital on Blackwell's Island, N. Y., etc.

No causes of nervous disease have been more neglected in examination than those having their seat in the external organs of generation, while in reality they may be said to play a very important part in many instances where they are entirely overlooked. I have been so repeatedly reminded of this fact within the past few months, that I have been prompted to study them more carefully than I had hitherto, and the following paper embodies the results of my investigations.

It will be my purpose to describe these neuroses as follows:—

First: Those depending upon reflex irritation, and uncomplicated with, and disconnected from, sexual excitement.

Second: The element of erethism as a cause of central disease; such erethism being continued, or repeated at frequent intervals. This second variety of cause is distinguished from the first by an absence of the primary psychical element.

I believe these causes to have much to do with most of the functional neuroses of infancy and childhood, and I take this occasion to refer to Dr.

Jacobi's¹ recent valuable paper upon the subject. Dr. Sayre² has also added many valuable cases to the literature of neurology. At one time, and not so long ago, most of the reflex neuroses were thought to follow that medical scapegoat, dentition, or else to depend upon intestinal irritation due to ascarides or other parasites. We now have, I think, a new direction in which to turn, and in many instances, we are rewarded for our efforts.

While recognizing the existence of such a condition in infancy as nervous disease dependent upon genital irritation, and accepting it as a common one, I am compelled to believe that so far as the external organs of generation in the adult are concerned, the field is more restricted. This statement applies more to the male than to the female.

The complex character of the nerves which supply the genito-urinary organs is such as to demand the most careful study, and the secondary relationship of these organs to the cerebro-spinal axis, is of still greater interest. A close intercommunication of the cerebro-spinal and sympathetic fibres is found to be the striking characteristic of nervous distribution. We find that the greater number of sympathetic fibres is derived from the hypogastric plexus which is divided at its lower part into the pelvic plexuses, and these supply, on each side, the bladder, vas deferens, the vesicula seminales, and a part of the penis; and in the female, the uterus, ovaries, vagina, and external organs of generation. Numerous branches of the sacral, and the pudic nerve supply the urethra, while the glans is very abundantly innervated, particularly by sensory fibres. Kölliker³ has found Pacinian bodies at the ends of the terminal nerves of this region in animals, and he, as well as other observers, has found tactile corpuscles in the clitoris. Arndt has recently advanced the opinion that the Pacinian corpuscles had some means of connection with the vaso-motor fibres.

In the consideration of physiological action we arrive at the most attractive part of our subject, for here it is necessary to dwell upon the relation these parts bear to the general nervous system and the mind. First of all we are to familiarize ourselves with a certain function of nerves, namely, inhibition, and then to consider the connection of inhibition with reflex action. The transmission of sensory impulses from these parts, the response of the cord or brain, and the local or central excitation of sympathetic filaments, demand a great deal of attention and discussion. Anatomy and physiology have taught us that erection of the penis or clitoris depends upon paresis of vaso-motor fibres, that reflex sensations from these parts produce various sensory and motorial phenomena, due to impressions carried to the cord and brain, or still again to curious psychical states. We have only to study the physiological condition, known as the orgasm,

¹ Amer. Journ. of Obstetrics, Feb. 1876.

² Spinal Anæmia, etc., Trans. of Amer. Med. Association, 1875.

³ Kölliker's Manual of Human Microscopical Anatomy. Translation by Busk and Huxley, p. 634.

to realize how general the action upon the nervous system may be. This is expressed by the involvement of the pneumogastric nerve, and as a consequence, there are altered respiration and irregularity of heart action; by flushing of the face or pallor, dependent upon altered functions of the sympathetic, by reflex sensory exaltation; and finally, by mental exhilaration and reaction.

After dwelling upon this side of the question it is not difficult to understand how various pathological states may result from any disturbance of equilibrium. The theory of inhibitory action as in the penis is explained most sensibly by Mr. Lauder Brunton, in the fourth volume of the *West Riding Asylum Reports*. He says:—

“The bloodvessels of the penis are kept in a state of moderate contraction by the stimulus which the vaso-motor nerves supply to their muscular walls. This stimulus is derived, in part at least, from ganglia lying close to the vessels, and to these ganglia proceed certain nerves; the *nervi erigentes*, which arise from the sacral plexus. When the nerves are irritated the ganglia cease to stimulate the vascular walls, and these constantly relax, and yield to the current of the blood which pours into and distends them, so that the organ becomes swollen and an erection takes place. After the irritation of the nerves has ceased, the ganglia reassert their power over the vessels, and cause them to contract, so that the blood is again driven out, and the organ becomes flaccid.”

A more extended view of the physiology embraces the participation of other ganglia and nerves. Several centres are called into action, and more extensive processes follow, and we then find sensory, motor, and psychical responses as evidences of a general participation of the cerebro-spinal system. Sensory impressions are conveyed to inhibitory centres, and from thence to motor centres, or are carried still further to the brain. This vaso-motor stimulus, alluded to in speaking of the process of erection, may be sent from remote centres, and even many vaso-motor fibres of the vessels of the penis are derived from filaments which take their origin in the vaso-motor centre in the medulla. This may be verified experimentally by cutting the splanchnics. The intestinal vessels supplied by fibres from the medulla, just as some of those of the penis are, will, after such section, become gorged with blood.

A law laid down by neuro-physiologists is, that reflex impressions of two kinds may be followed by different results. Thus one kind of irritation may produce a well-defined response, and another a still more decided form. For instance, tickling the feet produces involuntary movements, and sometimes, in susceptible persons, involuntary discharge of urine, while a more severe scratching will provoke nothing of the kind. This proves that two sets of ganglia exist, one a motor, another an inhibitory, which to some degree controls the motor when the impression is sufficiently strong. By inhibitory impressions of certain kinds, we may have, if I may use the term, a great number of *reflections*. The original sensory impression may be carried directly to an inhibitory centre of the cord, and as a result there may be alterations in its vascularity through alteration of function in the

vaso-motor fibres, or such vaso-motor disturbance may be located in the organs themselves, at the starting point, through excitation of the moderator fibres. Then again by one of the direct connections I have mentioned the sentient impression may go directly to the medulla, and the centres there undergo a change, subsequent to the transmitted excitement. Here we have ischæmia, and as a result various peculiar alterations of function in nerves originating from that part of the cerebro-spinal system. Dr. Brunton, whom I have before referred to, presents with his article an ingenious chart in explanation of the more complex phenomena of this form of nerve action, showing the connection of the point of irritation with sensory centres, and motor centres, presiding over muscular contraction, muscular co-ordination, vascular changes, etc. These two are connected by afferent and efferent nerves with an emotional and finally with a centre of ideation. The connection of the two centres of emotion and sensation may be directly connected with that of ideation.

Now, while apologizing for this somewhat disconnected consideration of the physiology of the subject, for justice could not be fairly paid it without wandering into the broad field of general neuro-physiology, I must mention several other physiological facts which have a direct connection with the pathology of the various conditions of which I am to speak. The first of these is, that stimulation applied to the terminal end of the nerve passing from the periphery does not go *always* to a definite nerve-centre, the impression generally goes to a number; and here I wish to say that I do not mean to convey the impression that nerve-tubes are not continuous channels, for physiology has taught us that one exact sensation may be conveyed directly by a special channel to a particular centre. I allude only to a gross irritation. Special impressions, often repeated, will make new channels for themselves, and a particular variety of irritation may be so often reflected upon one spot that the function of the locality will be impaired. The application of this will become apparent when we witness certain sensory impressions in one case, certain forms of contraction in another, and mental disturbance in a third. When the pathological states come under discussion we have two or three things to turn our attention to, namely: sensory impressions at the periphery, their transmission and the results. In regard to the first, the irritation may be of two characters, either those of a painful, or of a purely sexual or agreeable nature, but both liable to be conveyed to the nerve-centre, and do harm. The production of the first we know to be due to the direct injury of the sentient nerves, while of the second we do not know so much. Why tactile irritation should be received at the penis in a different way from painful, and transmitted in an altered form, while parts equally rich in sensory nerves should receive them in an entirely different manner, is a question for the physiologist to answer; or still further, why should one form of irritation produce even a temporary unconsciousness at times, while at others it does nothing of the kind? We

know very well that such excitations and resulting phenomena are manifested through impressions carried to the medulla ; but why these special nerves receive a peculiarly distinct sensation remains to be explained. The prick of a pin, the application of electricity, and other stimuli will not produce the same impression that friction does. As the clinical results of such morbid impressions, there is nearly always motor response, expressed either by convulsions of both lower limbs, with a disposition to flexion of the legs and thighs, an adduction of the toes which is marked, or else there are general movements of both upper and lower limbs. There may be convulsions which are epileptic in character, and there is often mental disturbance. This may vary from simple irritability to confirmed dementia. There may be melancholia or mania, or else a condition bordering on imbecility. In these latter cases, as well as others, I think the sexual element enters extensively into the question. In fact, I doubt whether there are any cases of mental trouble connected with genital irritation where masturbation, either unconscious or wilful, does not at some time enter. The result of long-continued reflection of sexual impressions is shown in every-day practice chiefly among ataxies and epileptics, so I will not discuss them. An important subject for consideration is the hysterical element, which is very common, and may mislead the examiner. Various dysæsthesiæ are spoken of by the patients, and include a coldness or wetness of the glans, or, on the other hand, there may be burning sensations. There are in reality no such conditions, for the temperature of the parts alluded to will be found to be perfectly normal. Trousseau¹ says, in this connection :—

“The individuals complain of very transitory sensations of heat, burning, or cold; they compare them to sensations caused by a current of electricity, or cold air, or by tepid water; they also complain of pains similar to those produced by a violent squeeze, etc.”

I have noticed that the patients who make these complaints are nearly always masturbators, or suffer from spermatorrhœa, and in dispensary practice I have met with so many of them who tell this story, that when one comes complaining that his penis is cold or hot, or something else, I always suspect him to be a victim of this habit, and endeavour to verify my suspicions, and nearly always meet with success. It is of absolute importance to settle the question whether the abnormal condition of the urinary organs is primary or secondary to the nervous symptoms. As we know, many forms of central nervous disease are characterized by striking urinary symptoms ; thus, in the paraplegia of myelitis, we often find erections of the penis, in other stages there is incontinence of urine. In the earlier stages of sclerosis there are seminal emissions and erethism, while the later are characterized by impotency, with paralysis of the bladder. With certain varieties of true spinal disease, there is urinary involvement,

¹ Lectures on Clinical Medicine, vol. ii. p. 283.

as well as decided atony or paresis of the muscular fibres of the rectum, with constipation or involuntary passages as the result. In other forms, such as essential adult spinal paralysis, there is no bladder or rectal trouble, the lesion being in the anterior horns of the cord. Subacute spinal meningitis is characterized by muscular spasms, by pain following motion of the lower limbs, or by darting pains running from the spine to the lower extremities. Other forms of paraplegia may be differentiated from those of the reflex form by the suddenness of their onset. According to Brown-Séguard¹ and other observers, we may conclude that the difference between paraplegia due to myelitis, its most common cause, and reflex trouble, is, that in the latter there is no constipation, no constricting band about the waist, no progress upwards of the paralysis, and the paralysis is incomplete, there are never twitchings nor spasms, there is no pain in the spine, no formication nor sensation of heat and cold, and rarely anæsthesia. The prognosis is good. The urinary troubles in true spinal disease, when they occur, are always secondary, and I think there should be no difficulty in recognizing them.

Now in regard to the alteration of physiological function that attends this form of disease, we have no less an authority to quote than Brown-Séguard. He considers the possible results that may follow a formidable reflex irritation as follows: First, contraction of the bloodvessels; second, morbid reflex influence on nutrition. In the discussion of the first subject he supposes that spasms of the vessels of the cord may be a consequence, through a stimulation of some excito-motor nerve reflected upon them by the cerebro-spinal axis. He has seen this contraction himself after ligation of the hilus of the kidney. In regard to the second question, he considers that there are no nutritive changes. I must differ from our eminent teacher in regard to the consequence of any protracted vascular change. These cases are so numerous that it is surprising that he does not acknowledge the structural changes that follow even a few months of active hyperæmia or anæmia of the nervous substance. It is true most of the cases of reflex paraplegia have been rapidly cured; but those I have heard of were seen in a short time after commencement of the disease. As a consequence of reflex excitation lasting for years, I think that secondary changes are very probable results.

To consider the pathological conditions systematically, we must first dwell upon the causes that may produce certain symptoms, and the form and appearance of such symptoms. We may enumerate the causes as continued morbid peripheral irritation sent from the genitals, either to the bladder, cord, or medulla oblongata. The character of this irritation will be presently considered. As a result of such action, I have divided the prominent neuric symptoms as follows:—

¹ Paralysis of the Lower Extremities.

First. Those expressed by want of muscular power.	{ Paresis, including paraplegia, and partial paresis of either isolated groups of muscles. Paresis of the muscular fibres of the bladder.
Second. Sensory.	{ Hyperæsthesia. { Anæsthesia. { Dysæsthesia.
Third. Vaso-motor.	{ Priapism. { Local hyperæmia.
Fourth. Hyperkinesis.	{ Choreic movements. { Transitory contractions.
Fifth. Psychological disturbances.	{ Loss of consciousness. { Impairment of memory. { Irritability of temper. { Melancholia. { Dementia.

The patient may present many of these symptoms at the same time. These are dependent upon a limited number of morbid conditions, so far as we know. In children it has been found that various congenital defects and acquired bad habits have preceded the appearance of one or more of them, and in adult life we have two causes, venereal excess, a common one; stricture and other urethral difficulties, rare ones. Besides these, which act by inhibitory reflection, we have various local neuroses of the penis, which may be traumatic or idiopathic. In regard to published cases, we have very little material to refer to. Graves¹ reports a case of paraplegia due to stricture, Otis² has detailed some observations, and Sayre has published his cases from time to time. Before entering into the history of the cases of these observers, I think it will be more proper to consider the morbid condition of the organs under discussion. So far our attention has been called to the condition of phimosis or other genital irritation, and stricture of the urethra. Of the first, Dr. Sayre has presented us with ten cases which he reported at the last meeting of the American Medical Association. These children all suffered with a peculiar train of nervous symptoms which are included in the table I have just detailed. Of Dr. Sayre's patients, six were between three and four, two were two years old, and two were five years old. Of these, eight were boys and two were girls; in the boys there was generally congenital phimosis, with agglutination of the prepuce and glans; in the girls an elongated and inflamed clitoris. Symptoms of want of power or imperfect locomotion, adduction of the lower limbs, atrophy of the muscles of the thighs and legs, incontinence of urine, and various mental disturbances of greater or less gravity, such as hysterical laughter, irritability of temper, or imbecility, were also presented. After operation Dr. Sayre's cases re-

¹ Quoted by Black (Functional Diseases of the Reproductive Organs).

² Otis on Reflex Irritations throughout the Genito-Urinary Tract, etc.

covered in short spaces of time, varying from a few hours to as many weeks. In some of these patients the nervous symptoms appeared a short time after, and in others at birth. Dr. Sayre¹ includes in his second paper several cases brought to him by medical men throughout the country. Dr. Francis H. Brown,² of Boston, reports a case of paraplegia in a boy ten years of age. With the paraplegia there was incontinence of urine. Dr. Brown's attention being brought to the subject by Dr. Sayre's brochure, he examined the penis, and found a severe balanitis, with preputial constriction. After circumcision the cure was rapidly effected. Drs. Green and Leech also contribute cases which Dr. Sayre quotes. It has been my fortune to see four cases of this kind, one at the request of Dr. Sayre, another with Dr. Harrigan, of Brooklyn, a third in my own practice, and another with Dr. V. P. Gibney, of New York.

CASE I.—Dr. Sayre's case was a boy seven years old, well nourished, with rosy cheeks and well-rounded muscles of the upper extremities. His morbid condition had existed from birth, and he possessed a congenital phimosis, the prepuce being firmly fastened over the glans, and the preputial orifice was very small and surrounded by a rigid ring of toughened skin. On entering the room I was struck by the extraordinary restlessness and activity of the child. He was lying on the bed, and his lower limbs were drawn up and agitated by irregular convulsions. The arms were also convulsed, and their movements were distinctly choreic. When held upright, the child was unable to stand, not from any paresis, but from the apparent loss of co-ordinating power, the legs becoming rigid, and the toes of both feet adducted, more particularly the left. The child was unable to speak, but attracted the attention of those around him by queer sounds. His face was distorted, just as we often see it in old choreic patients, but there was no evidence of imbecility. I did not infer that there was any mental trouble, except a preponderance of emotional disturbance, the boy being very fearful that he was to be hurt. Upon interrogation I found that he was quiet during sleep, that his appetite was good, and that there was no irregularity or disturbance of the functions of the bowels or bladder. The penis was not as sensitive as I had expected to find it from Dr. Sayre's description of previous cases. Titillation did not produce immediate erection, nor any increase of the spasmodic movements. On taking him upon my lap, the thighs and legs were immediately drawn up. There was no evident pain produced by pressure on the spine.

CASE II.—Rosa A., five years old, very pale and delicate. Like one of Dr. Sayre's cases, this child was almost asphyxiated when born, and it was nearly ten minutes before she was resuscitated. A year after birth she contracted scarlet fever, but no other trouble supervened. After birth it was noticed that there was want of power in the lower extremities; she was entirely unable to stand, and as soon as she was held in an upright position her legs became stiff. Her intelligence was unaffected, and she did not suffer pain in any part of the body.

Present condition.—The legs are well proportioned, and there is no atrophy, the temperature of both limbs is not lowered, but there is slight

¹ Spinal Anæmia, etc.

² Ibid., p. 20.

hyperæsthesia. When held in an upright position by her father, who accompanied her, the legs become rigid, the toes cross each other, and one foot seems inclined to cover its fellow. With this rigidity there are irregular convulsive movements, there is a marked contraction of the sural muscles, which draws up the heels. When laid upon her back, the thighs are drawn up upon the pelvis, and this her father states is her position at night. At this time the head is drawn back and downwards by firm contraction of the trapezius and other muscles of the neck. An examination of the genitals disclosed a very large cyanotic clitoris quite erect. There was no history of worms. Unfortunately, for it was a dispensary case, the father would not allow anything to be done in the way of surgical interference.

CASE III. Convulsions simulating Epilepsy occurring with Congenital Phimosis.—This patient was a boy seven years old. He had been subject from early infancy to convulsions, which appeared at varying intervals, and were characterized by their short duration, absence of the element of sleep subsequent to the convulsion, and of the pale stage. His bodily condition was good, the skin being clear, and the muscular development perfect. A phimosis and contracted preputial orifice existed. There was incontinence of urine. No history of traumatism of any kind. Patient's immediate family healthy. I recommended circumcision.

CASE IV.—I was enabled to examine this patient through the courtesy of Dr. Gibney. James D., aged nine and a half, a well-developed boy, of nervous temperament, with dark eyes and hair. Dr. Gibney obtained the following history: He was one of twelve children, three of whom were still-born, and five have died of exanthematous diseases. The mother was in labour forty-eight hours when this child was born, and she was delivered finally by the forceps, a mark of which still remains in front of the child's right ear; convulsions two or three days immediately succeeding birth. When nine months old the mother thought it was time for him to begin sitting alone, and placed him on the floor for this purpose, when he rolled over on his side quite rigidly. He did not begin to learn to talk until three years of age, and then was a long time in making himself understood. He began to stand, and made attempts to walk when four years old, when the spasm was noticed more markedly. There was no history of painful erections nor anything like masturbation, but there was nocturnal incontinence.

Present condition.—The boy's whole body is agitated by choreic movements, but more particularly of the legs, which present the same appearance in Cases I. and II. I have alluded to. There is the same rigidity, the same drawing up of the heels, and the same dancing motion. This is seen when he stands up. His glans penis is covered by a prepuce, the orifice of which only admits the head of a small silver probe.

Besides this case, Dr. Gibney brought to me a boy having a very tight prepuce, which it was difficult to retract. Beneath it was a purplish-red glans, which, when uncovered, stood out like a ball, as the constriction at the base was excessive. This boy, eight years old, has had chorea twice; two years ago, it lasted six weeks. The disease again appeared two weeks ago. Whether the tight foreskin is a coincidence or a cause, I am not prepared to say.

A review of these cases enables us, I think, to draw the following conclusions: That convulsive movements, more particularly of the lower

extremities, the spastic contractions of the flexors of the thighs and legs, are connected, in some children, with a continued irritability of either the glans penis or the clitoris. That, as a rule, beyond irritability, there are no mental symptoms. That the exaggerated power, or hyperkinesis, is the rule. That atrophy, or actual akinesis, is exceptional. That want of coördinating power is common. I infer from Dr. Sayre's results that the removal of the seat of irritation is followed by a cure.

After discussing this part of the subject, I invite attention to those nervous conditions following another form of irritation, namely, that connected with sexual excitement, into which the psychical element enters largely, and which I believe to be the most important part of the subject. That venereal excesses and masturbation are causes of nervous disease, in the greater number of instances, I have no doubt. I have alluded to the anatomical relation of these parts, and I have now only to hint at the effects of repeated intense impressions transmitted from the genitals to the medulla, and the processes that follow. The pathology of gastric epilepsy, when even a hearty meal may induce a series of convulsions, is too well known for me to dwell upon longer than to point out the comparison between the violence of this excitement and that received and transmitted by the sensory nerves of the penis. Clinical experience presents this fact much more forcibly to our minds. Not only have I seen sciatica, and other forms of neuralgia, induced by nothing else than excessive venereal indulgence or onanism, but epilepsy as well. Cerebral and spinal irritation is the most persistent and common pathological condition connected with venery, and, if continued, we know that, as a result, structural changes, notably sclerosis, will occur. And here I may give a case of epilepsy, dependent upon masturbation, probably springing from a congenital defect.

CASE V.—A girl, 16 years old, has had convulsions for the past four years, having sometimes several during the twenty-four hours. There was a mental condition bordering on melancholia. Her skin was blue and dusky, and pressure left a white mark. The lips were swollen, and the lines were obliterated so that the familiar expression so constant in melancholia was strongly marked. Her demeanor was shy, and she rarely looked any one full in the face. Under tonics and every variety of special treatment there was no amelioration. Masturbation was acknowledged, but she stated that she had no control over herself. Careful watching and the use of the muff at night broke up the habit. A week after this improvement took place, and the number of convulsions was greatly lessened. She is now entirely well. The clitoris of this patient was very long, quite blue and angry looking, and very easily erected.

Of all morbid changes, following long-repeated venery, the moral are most striking. That insanity may follow, there can be no doubt; and in the few cases occurring among children, masturbation has been shown to

be usually the exciting cause. Dr. Kinnicutt¹ publishes two cases of interest. One of them is the following:—

The patient was a girl 13 years of age. Five weeks from the commencement of an attack of croupous pneumonia, when convalescence was taking place, the parents noticed sudden outbreaks of a peculiar mental change. A short time after going to bed she arose and went down to her father's room in her night dress. Her expression was wild, and she astonished him by singing, dancing, and reciting snatches of poetry. Her answers to the inquiries showed that she was labouring under very vivid hallucinations of sight and hearing. She said that she was surrounded by people who were determined to murder her; that there was blood upon her clothes, etc. She remained in this excited condition for forty-eight hours, and did not sleep any part of this time. This was followed by a profoundly melancholic state, which continued for some days, when recovery took place under judicious treatment. Meanwhile she confessed the bad habit, which had been the cause of the trouble.

I have also seen two cases of children in my own practice, besides that alluded to above; one a boy of twelve years, the other a girl of fifteen. In both of these onanism was the cause. Both children had well-marked delusions, and improved under mechanical restraint and watching. The first case had had incontinence of urine during infancy, which lasted until the fifth year. Among adults, I think this cause is not so common as is generally supposed, but still it is often met with.

I have now at the hospital for epileptics and paralytics, on Blackwell's Island, a girl fifteen years old who has frequent epileptic attacks, both of *haut mal* and *petit mal*. As my suspicions were so directed, I found she was a confirmed masturbator, and she confessed having practised self-abuse several times a day. Her genitals were red and swollen, and there was a profuse discharge of pus. There were many scratch-marks in the neighbourhood of the vulva, and much pruritis. Unlike the other case I have mentioned, there was no malformation of the external organs of generation.

It remains for us now to consider stricture of the urethra as the cause of nervous symptoms. As I have already said, I believe it rarely produces other than local troubles. Feeling my own want of experience, I have written to several medical men who devote their entire attention to genito-urinary affections, and herewith append portions of their replies. Dr. Keyes says:—

"I think the tendency of the present day is to ascribe vastly too much importance to genital irritations, stricture, etc., as a cause of different neuroses, than they deserve. I occasionally see instances of the latter neurosis reflex from the genito-urinary system, but they are far from common, although my daily duties bring me into contact with genito-urinary troubles. . . . I believe the sexual element, generally totally ignored, has usually more to do with the neuroses in question than any other one factor."

Dr. Sturgis informs me that these cases are very uncommon in his practice. Dr. Gouley, to some degree, takes an opposite view. In answer to my note, he says:—

"In this connection I wish to state that for many years my attention has been attracted to the various neuroses, and other reflex phenomena arising in consequence of irritation of the genital and urinary organs."

¹ Trans. Amer. Neurological Association, 1875, p. 196.

On page 16 of his admirable work, Dr. Gouley calls attention to the subject as follows: "The brain and nervous system are sometimes in a state of irritation leading to a train of phenomena which have been properly called urinary neuroses."

Most of these cases have been reported by Dr. Otis, and one or two other American authors. Neuralgia is, perhaps, the most common neurosis connected with urethral stricture. Neucourt¹ has described forms of lumbar neuralgia depending upon painful spasmodic constriction of the urethra, and Gouley also alludes to this neuralgic condition.

"It is a common thing," he says, "for persons to consult their medical attendants for troublesome and long-standing sciatica, often confined to the left side, with the story that they have been cupped and blistered repeatedly, and have made use of hypodermic injections, etc., with no lasting relief. Close examination of such cases rarely fails to bring to light some disorder of the urinary organs, the cure or relief of which speedily removes all existing nervous complications."

Spasmodic stricture is sometimes followed by paraplegia, or vesical paralysis, generally of short duration. Dr. Otis's² pamphlet upon reflex irritations lies before me, and in turning over its pages I find nineteen cases related, which as a rule treat of local symptoms. Case I., as far as I can judge, presents no indication of nervous trouble. Case II. is characterized by a condition denominated by the author, "nervous uneasiness." Case III. presents as its chief symptom spasmodic stricture with a gleet. This spasm was induced by the passage of a sound. Case IX. presents symptoms of spinal congestion. Cases XII. and XIX. rhythmical contractions of the cremaster muscles. All the others present no nervous features, which I think worthy of notice, as evidences of concurrence of the general nervous system. All of these local reflex phenomena exist in every cavity lined with mucous membrane, and richly supplied with sentient nerves. In nearly every one of Dr. Otis's cases there was inflammatory trouble. That any *long* continued irritation, at any peripheral part of the body, particularly where the nerve supply is abundant, may produce serious neuric symptoms there can be no manner of doubt, but that these troubles are as constant and common as Dr. Otis suggests, is to my mind not at all certain. In some individuals of a nervous diathesis such a condition is a possible one with stricture or contracted meatus. What such stricture or contraction is must be determined by the medical men who make these things a special study. I must differ, however, with Dr. Otis in regard to the normal calibre of the meatus and urethra, and while carefully avoiding any possibility of trespassing on the field of the surgeon, I am compelled to believe that rapid and extreme dilatation of the urethra must be followed by bad results, and they are oftentimes sudden and severe. I therefore do not

¹ Quoted by Van Buren and Keyes.

² On Reflex Irritations, etc. New York, 1875.

think dilatation should be carried beyond a reasonable limit, unless there is a great necessity for so doing. What this normal calibre is I do not think has yet been determined. Dr. Otis has made a comparative table which was published in the pamphlet I have before alluded to, in which a relative proportion between the calibre of the urethra, and the diameter of the penis is fixed upon. It suggested itself to me that in individuals who were indulgent in the matter of sexual gratification, the penis must become larger in calibre from constant active or passive hyperæmia, and the ratio between the external diameter, and that of the meatus altered to a great extent. It is either Curling or Roubeaud who quotes a case where the first intercourse of an individual was followed by a varicose condition and permanent enlargement. If what I say is true, it would be difficult to make any comparison of this kind that would be at all exact. One point deserves special consideration, and I refer to the contraction of the meatus. Hancock,¹ describing the anatomy of the urethra, speaks of the muscular coat which forms a sort of a sphincter at the lips of the meatus. If this is the case a natural narrowing must be the condition at this point, and considering the functions of such muscular constrictions at other parts of the body, we are justified, I think, in here looking for some special duty. Although the urethra is narrower at some other parts, I am of the opinion that this narrowing of the external orifice, besides making the stream more compact at its exit, has something to do in giving the muscular fibres of the posterior part of the urethra and bladder, work to do which keeps up their nervous tone, and consequently their integrity of action. We may assume, however, when this orifice is closed after ulcerative action, or fails to admit a moderately large sound, that it should be enlarged. So too the urethra; very large sounds in my opinion do more harm than good. In more instances than one has dilatation by Holt's instrument produced such an impression upon the nervous system as to cause death, and we all know that moderate sounding is frequently followed by violent nervous rigors, and other troubles suggestive of a profound impression upon the general nervous system. Should there be doubt in the mind of the medical man in regard to the patient's condition, he must study intelligently the symptoms of true central difficulty. He will find that motorial symptoms expressed by loss of power are nearly always the result of spinal or cerebral organic disease, that, on the contrary, transitory loss of power, usually unaccompanied by anæsthesia, betokens some inconstant disturbance in the supply of nerve force. These reflex conditions, as a rule, are more the result of meningeal irritation than anything else. Exalted function is therefore to be expected with hyperæsthesia.

These cases are so uncommon that mistakes in diagnosis are likely to be made. It is absolutely necessary, therefore, to exercise the greatest

¹ Hancock's Anatomy and Physiology of the Urethra, 1852.

caution; but the duration of the trouble and the antecedent history should enable the physician to discover his patient's ailment. Verneuil has called attention to a case of neuralgia due to a neuroma in the prepuce. The pain was severe, and only relieved by an operation. Surgeons are familiar with small exquisitely tender spots that are often left after venereal sores, particularly when they appear beneath the glans. These are generally not permanent. The prognosis of all these affections is good, provided a correct diagnosis is made, which is not always an easy matter, unless one is on the alert. In the neuroses found with contracted prepuce, we take into consideration the contraction of the flexors, the *false talipes*, the choreic movements, and the general irritability of the patient. The discovery of a prepuce red and adherent to the glans, and capable of being erected easily, calls for removal, and a cure is probably the result. In reflex paraplegia, or other neuroses distinctly traceable to the penis, the division of the stricture is always followed by amelioration or total disappearance of the morbid condition.

The question of sexual disturbance is a more serious one, and moderation or abstinence is to be enforced before expecting good results. As to treatment, the indication undoubtedly is to reduce the irritability at the nervous centres, and to remove the peripheral point of irritation. The surgical means I have alluded to are generally sufficient, combined with local spinal anæmiants and sedatives, such as conium and the bromides, ice and ether spray to the spine, electricity or massage for the muscles, and sometimes orthopædic apparatus.

There is a tendency, I think, to attach vastly too much importance to the causes arising at the genitals as factors of nervous disease, and while recognizing the important part they often play in the production of such derangements, I think some of us are too frequently inclined to remove the foreskin or dilate the urethra, where in one case the covering of the glans is a normal condition, and in the other the canal is large enough to perform the functions intended by nature.

ART. III.—*The Physiological Action of Sanguinarina, the Alkaloid of Sanguinaria Canadensis.*¹ By ROBERT MEADE SMITH, A.M., M.D., one of the Resident Physicians in the Episcopal Hospital, Philadelphia.

THE chief end to be aimed at in investigating the physiological action of remedies, is to discover what structures are affected by the drug in question.

¹ This article is an abstract of one of the theses to which the alumni prize was awarded at the Commencement of the Medical Department of the University of Pennsylvania, in March, 1876.

To accomplish this, the simple administration of the drug is of no avail; we must isolate each individual organ, which, from the general action of the substance, we suppose to be affected, so as either to prevent the poisoned blood from reaching it, and then seeing whether the condition, which we suppose to be due to the poisoned state of that organ, be absent, or by confining the poison to that organ, and then expecting an aggravation of the abnormal condition; in other words, it must be accomplished by a process of exclusion. By determining the general action of a drug, we may guess at what structures are affected, but experiments, on the plan which I have mentioned above, are necessary to verify or refute these hypotheses. An acquaintance with the general action of the poison, however, is of course first needed before we can attempt to explain individual symptoms.¹ I have made a number of experiments in studying the general action of sanguinarina, of which I give the following as examples:—

Expt. I.—Small cat. 1.30 P. M., 0.0125 grm. subcutaneously: no marked symptoms, but general uneasiness. 1.35 P. M., 0.024 grm. subcutaneously: pupils small; respiration 60 per minute. 1.50 P. M., 0.02 grm., subcutaneously: pupils slightly dilated; drowsy. 2.13 P. M., 0.0175 grm., injected through a tube into stomach: respiration 100 per minute; retching; tongue protruding; constant chewing movement. 2.21 P. M., respiration 173 per minute; profuse salivation; micturition. 2.23 P. M., watery alvine evacuation; constant panting. 2.25 P. M., vomits violently; constant retching; pupils largely dilated; cutaneous sensibility increased; violent extension of head; muscular inco-ordination. 2.45 P. M., defecates. 4.30 P. M., defecates. 6 P. M., greatly recovered; next day apparently well.

Expt. II.—Pigeon. 12.24 P. M., 0.024 grm. subcutaneously: flies wildly. 12.38, attempt at emesis. At 12.42 and 12.52 P. M., 0.025 grm., subcutaneously: unable to stand. 12.58, vomits. 3 P. M., 0.025 grm., into stomach through a tube: defecates; muscular trembling; remains crouching for several hours; unable to stand, walk, or fly; motionless when touched; was returned to its cage; dead next morning.

Expt. III.—Guinea-pig. 1.51 P. M., 0.0375 grm. subcutaneously: micturition; chewing motion. 2.02 P. M., 0.0375 grm. subcutaneously: constant backward movement. 2.10 P. M., 0.0375 grm. into stomach through a tube: falls immediately on its side; violent retching; unable to rise. 2.20 P. M., 0.035 grm. into stomach: retching and staggering; falls over; violent convulsions; extensions of head; gasping. 2.26 dead.

¹ The sanguinarina employed in my experiments was a crystalline sulphate, prepared for me in the laboratory of Messrs. Hance, Bro. & White, Philadelphia, and as it agreed entirely in its physiological effects and behaviour to tests with samples obtained from other sources (Merck's article), there can be no doubt as to its purity. I administered it in a perfectly neutral aqueous (distilled) solution, strength 1 c. c. = 0.025 grm. When, however, I desired to give a larger dose, I found that by adding the salt to warm water, I could get a permanent solution as strong as 1 c. c. = 0.05 grm. At no one time was more than 1 c. c. of the solution injected subcutaneously in frogs or into a vein toward the heart in mammals. The instruments used for nerve irritation in all my experiments, unless otherwise specified, were one Grove cell, eighty-one millimetres high and fifty-eight millimetres in diameter, Dubois Reymond's induction apparatus, occasionally with Helmholtz's modification, and Ludwig's electrodes. Opening and closing induction shocks were produced through Dubois Reymond's key.

Expt. IV.—Frog. Weight 29 grms. 9.47 A. M., 0.025 gm. subcutaneously: jumps away; pupils widely dilated. 9.52, violent inspiration. 9.53, extreme extension of head; slight convulsions. 9.56, more marked tetanus; very violent clonic spasms. 10 A. M., chest opened; heart beating irregularly, feebly, and slowly; auricle sometimes making two beats to one of the ventricle, which finally comes to rest in systole.

Expt. V.—Frog. Weight 28 grms. 10.48, 0.0125 gm. subcutaneously. 10.50, extension of head; slight convulsions; anterior extremities rigid. 10.59, muscular inco-ordination; animal in a state of adynamia. 11.1, chest opened; heart beating 16 per minute; touching cord causes only slight movement.

The most marked feature in poisoning by sanguinarina, is the complete prostration and adynamia which ultimately appears, usually, however, preceded by a stage of excitement, in which occur clonic convulsions. When a small dose is given to a cold-blooded animal, the first symptom noticed is a stage of increased respiratory excitement, usually followed, though sometimes accompanied, by dilatation of the pupil; then the respiratory movements become slower and slower, and now the animal is usually in a state of clonic convulsions. These convulsions, however, do not always appear, their place sometimes being taken by a spasmodic rigidity of all the members, more marked in the anterior extremities, in which this state is permanent, lasting long after death. The convulsibility is soon lost after repeated irritations, and then it is only after a period of complete repose, lasting for several minutes, in which the nerve centres have time to recover, that spasms can be excited. Occasionally, after a larger dose, the frog passes immediately into a state of collapse, lying flaccid and helpless, with limbs extended, and entirely heedless of any irritation. If the chest is now opened, the heart is either found at rest in systole or else beating feebly and irregularly. It responds feebly, but rhythmically, or else not at all, to electricity, while the other muscles are more strongly irritable. If, however, the irritation be applied to the muscles, near where the hypodermic injection was given, they are found to have lost almost entirely their inherent contractility. When the various tissues and organs are examined post-mortem, there is no lesion discoverable, but intense venous congestion. In warm-blooded animals, it always, sooner or later, produces a state of collapse. When given subcutaneously, the injection causes considerable local irritation, soon followed by general uneasiness and muscular inco-ordination. When thrown into the stomach, it always causes nausea and vomiting, attended by violent retching, and even when given subcutaneously, sometimes causes emesis, and always more or less nausea. In several instances it caused purging of dark liquid stools. One of the most constant symptoms attending the exhibition of sanguinarina, is a profuse and long-continued salivation, and that, too, occurring independently of emesis. Here, as in the cold-blooded animals, a small dose causes an increase in the number and violence of the respiratory movements, followed by a diminution in their frequency and a state of heightened sensibility, attended by clonic spasms. When, however, the

dose is larger, the animal passes immediately into a state of adynamia, with marked inco-ordination of movement, dilated pupils, deep and gasping respiration, violent retching, and emesis, with aimless spasms, terminating in death. When examined post-mortem, the rigidity of the anterior extremities is not as marked as in the frog. When the chest is opened, some time after all respiratory movements have ceased, the heart is still seen beating, though slowly and feebly, and soon comes to rest in systole. No post-mortem lesion is discoverable, but venous congestion and entire cessation of intestinal peristalsis. When, however, the poison has been injected into the stomach, that organ is found in a state of congestion, with its mucous membrane red, and, in some cases, when death has not been immediate, softened from local irritation. The pupils are always dilated. Occasionally I have observed narcotic effects in the course of the poisoning, but generally subordinate to other symptoms.

Adynamia, the prominent symptom of sanguinarina poisoning, may be caused by paralysis of the motor or sensory nerves or of the muscles themselves, or it may be caused by direct action of the poison on the spinal cord; each of these modes will be studied in turn.

Nervous System. 1. *Action on Motor Nerves.*—If the poison is introduced into the circulation, and then produces general motor paralysis, the motor centres and muscles being assumed to be intact, it is evident that its action is purely localized on the motor, afferent nerves; and such being the case, if the poison can be prevented from reaching those nerves, no paralysis should ensue. This can be accomplished by the method of Bernard, which consists in ligating the bloodvessels in one extremity, so preventing the poison from acting on any of the tissues in that extremity, and then by comparing the irritability of the nerve in the ligated member, below the seat of ligature, with the irritability of the nerve on the side to which the poison has free access, it can be determined whether the function of the motor nerves has been interfered with by the poison.

Expt. VI.—Frog. Weight 28 grms. Iliac artery and veins ligated on right side. 11.15 A. M., 0.0125 gm. subcutaneously. 11.17, losing power in anterior extremities; co-ordination disappeared; clonic convulsions. 11.26, forelegs rigid. 11.38, heart beating 24 per minute. 11.50, 0.0125 gm. subcutaneously. Heart, 12 per minute. 11.55, dead. Sciatic nerves on both sides respond at 20 c. c. (Dubois-Reymond induction coil). Muscles on both sides at 28 c. Feeble movements caused by irritating spinal cord.

Expt. VII.—Frog. Weight 69 grms. Iliac artery and veins ligated on right side. 10.45 A. M., 0.024 gm. subcutaneously. 10.52, violent respirations; 60 per minute. 10.55, want of co-ordination. 10.58, does not move when touched; when placed on back is unable to turn over. 11.10, chest opened; heart beats 24 per minute. 11.40, dead. Peripheral sciatics on both sides irritable at 17 c.; muscles at 10 c.

In these it is seen that sanguinarina has no effect whatever on the motor nerves. This possible cause of paralysis and adynamia being thus excluded in this instance, it may still be explained as being due to a

paralysis of the sensory nerves, so that no irritation can be conveyed to the spinal centres, and consequently no reflex actions evoked. This theory would be more plausible if the narcotic action of this drug was more marked, as then, the influence of the cerebrum being removed, any action which followed any excitation would be an excito-motor reflex action, and irritation being prevented from reaching the cord by paralysis of the sensory nerves, the animal would be virtually paralyzed.

2. *Action on Sensory Nerves*.—I have employed several methods of studying the function of sensory nerves when sanguinarina has been given—that of Von Bezold and Blœbaum, Pflüger, and Brown-Séquard; the method which I think furnishes the most reliable results is as follows: The vessels are tied in one lower extremity of a frog, and the poison injected subcutaneously into the body. After death, or just before death, the irritability of the skin and *central* extremity of the sciatic on one side is compared with that of the other. I have shown that the motor nerves are not paralyzed, and as we for the present suppose that the ganglia are unaffected, if the sensory nerves are also unaffected the central irritability of the skin and sciatics should be equal; because, even if the spinal centres are weakened, an irritation of the skin and central end of the sciatic on one side, which would produce reflex movement on the *opposite* side, should, when applied to the opposite side, produce a similar result if the conducting power of the two sciatics remained the same. Suppose now, however, that sanguinarina should paralyze the sensory nerves, then an excitation of the skin and central sciatic on the poisoned side would cause no reflex motion on the opposite side, because the stimulation would not reach the cord, while irritation of the nerve which had not been reached by the poison, would cause motion in the opposite limb.

Expt. VIII.—Frog. Weight 69 grms. Iliac artery and veins tied on right side. 11.20, 0.025 gm. injected. 11.30, want of co-ordination, slight convulsions, rigidity of anterior limbs; does not move when pinched. 12.10, dead. Central end of both sciatics *not* irritable at 0. Peripheral ends at 20 c.

Expt. IX.—Frog. Weight 17 grms. Iliac artery and veins tied on right side. 11.30., 0.0125 gm. injected. 11.31, losing power in front legs; co-ordination gone. 11.58, heart 24 per minute. 12 M., 0.0125 gm.; heart 12 per minute. 12.5, dead. Central ends of sciatics on both sides feebly irritable at 0. Irritation of cord causes weak movements.

In these it is seen that the central ends of both sciatics are equally un-irritable; irritation of the skin produces a like result. If this were due to paralyzing action on the sensory nerves, the one which was protected from the poison should have preserved its functions. This, however, is not the case; so it is probable that the paralyzing effects of sanguinarina are due to its action on the ganglia of the cord.

3. *Action on the Spinal Cord*.—That the convulsions which are produced by sanguinarina are not of cerebral origin is proved by the fact of their occurrence after the cord has been cut. This is shown in one of my

experiments on the circulation, in which the convulsions occur in a cat after the cord has been cut and no curare given.

Expt. X.—Frog. Weight 47 grms. Ablation of cerebrum at 11.25. 11.30, 0.024 grm. subcutaneously: crawls; sensation appears heightened; slight muscular quivering when touched. Irritation with acid causes convulsions. 11.45, 0.024 grm.: lower jaw relaxed; slight tetanus when touched.

Expt. XI.—Frog. Weight 19 grms. 6.4, 0.024 grm.: pupils dilated; sprawling attitude. 6.11, marked tetanus; cord cut below medulla, after which no tetanus could be evoked. Heart dead in systole at 6.20.

Here convulsions are seen after section of the cord, and although removal of the cerebrum sometimes caused the disappearance of the convulsions in animals which had previously shown them, that disappearance was probably due to the shock of the operation. It is almost impossible to study accurately the cause of the tetanus which sanguinarina causes, because even under ordinary circumstances its appearance is not constant, occurring strongly in some animals, while the same dose will kill another animal of the same size and species, in the same time, without the slightest struggle.

Expt. XII.—Frog. Weight 20 grms. Iliac artery and veins tied on left side. 10.20, 0.025 grm. subcutaneously into back. 10.25, marked tetanus in the whole body. 10.30, want of co-ordination. 10.35, dead.

Here it is seen that spasms appear in *all* parts of the body, even though the poisoned blood is prevented from reaching the motor nerves, the peripheral terminations of the sensory nerves, and the muscles all on one side; so that if convulsions were due to stimulation of the muscles or motor nerve endings, they should not appear in the limb from which this stimulation has been excluded. It is true that excitation of the peripheral extremities of the sensory nerves in the limb to which the poison has free access might so excite the spinal cord that it would reflexly cause convulsions in the tied limb; but that this is not the case in this instance I have proved by injecting the poison *below* the ligature, and then failing to produce convulsions. As also cerebral excitation has been excluded in Experiment X. as a cause, and as my experiments on the circulation where convulsions appeared after section of the cord excluded the possibility of their being due to irritation of any other part of the brain, the only remaining possible origin of convulsions from sanguinarina is spinal excitation.

Influence on Reflex Action.—The best method of studying reflex action is that of Türck, of Vienna. It consists in carefully removing the cerebrum of a frog by a section level with the anterior margins of the membrana tympani. When the frog has recovered from the shock, it is vertically suspended by a wire coiled around its body in such a manner as to hold its body while it leaves its lower limbs free to move. Then the reflex excitability of the spinal cord is measured by the time the frog will keep its foot immersed in a weak solution of sulphuric acid (1 gtt. to about 50 c. c. water). After each withdrawal of the foot, it should be

immersed in distilled water, so as to remove all the acid from the skin of the frog's foot. The duration of the immersion is marked by a metronome beating seconds. I give the following as examples of twenty experiments on this point:—

Expt. XIII.—Large frog. Cerebrum removed at 1.25 without bleeding. 3 P. M., r. a.¹ in 15", 17", 14", 15". 3.15, 0.008 grm. subcutaneously. 3.20, r. a. in 22". 3.42, r. a. in 16". 3.48, r. a. in 23". 4.10, r. a. in 51". 4.12, cord cut. 4.21, r. a. in 12". 4.27, r. a. in 10". 4.35, r. a. in 12".

Expt. XIV.—Frog. R. T. Cerebrum removed at 1.37. 3 P. M., r. a. in 12", 12", 12". 3.17, 0.008 grm. injected. 3.26, r. a. in 32". 3.44, r. a. in 36". 4.11, r. a. in 28". 4.13, cord cut. 4.22, r. a. in 13".

Expt. XV.—Green frog. Cerebrum removed at 11.18. 11.35, r. a. in 11". 11.40, 0.0137 grm. injected. 11.45, r. a. in 21". 11.55, r. a. in 44". 2.15, r. a. in 28". 3.30, cord cut. 3.50, r. a. in 10". 4.30, r. a. in 8".

Expt. XVI.—Frog. 12.35, ablation of cerebrum. 12.43, r. a. in 17". 12.44, cord cut. 12.54, r. a. in 7". 12.55, 0.023 grm. injected. 1.10, r. a. in 19".

These, with the majority of my other experiments on this subject, show that sanguinarina decreases reflex excitability, and that section of the cord just below the medulla causes this depression to disappear, and permits the reflex excitability to approach the state in which it was before the poisoning. This can only be explained by the excitant action of the drug on Setschenow's centre (inhibitive of reflex action), because the division of the cord below the medulla removes this centre. This restoration of reflex irritability to its normal state by division of the cord would not take place if the depression was caused by an action on the cord; for when the cord was previously divided, it required a very much larger dose to produce a corresponding result. Hence the conclusion is, that sanguinarina reduces, in small doses, reflex excitability by an irritant action on Setschenow's centre. It is, however, probable that large doses depress the reflex action of the cord itself, since, when the cord is irritated in such instances at the time of death, little or no motion is evoked, though the motor nerves and muscles may be still excitable. I have only presented the above few experiments out of fifty-three others, to economize space; the others are entirely confirmatory.

Circulation.—My experiments on the circulation are fifty in number, and were made on cats, dogs, and rabbits. In a few instances I used chloroform as an anæsthetic, and although the results obtained differed in no respect from those observed in animals which had not previously been thus anæsthetized, I have omitted them on account of the similarity of action on the vascular system between sanguinarina and chloroform. The animal experimented on was placed on Czermak's holder, and the carotid artery connected with a mercurial manometer, which registered the movements of the heart on Ludwig's registering apparatus; the rate of movement of the drum was also registered by a magnet governed by Bowditch's clock, beating seconds. By a lever attached to the electro-magnet, the

¹ r. a. stands for reflex action.

beginning and end of each injection were registered, as well as the time during which a nerve was irritated. In almost all instances I injected, subcutaneously, a small amount of the sulphate of morphia to deaden sensibility during the operation. I have found that it did not interfere with the characteristic working of sanguinarina. The poison was injected through a canula, previously filled with distilled water, and bound in the external jugular vein, no air being allowed to enter. The poison was always injected towards the heart. Observations of pulse and pressure were made every consecutive fifteen seconds; when, however, there was no change in either, those portions of the experiment have been omitted. The blood-pressure is given in millimetres of mercury, the pulse for periods of fifteen seconds.

I made sixteen experiments to determine the general action of sanguinarina, of which I give the following as examples:—

Expt. I.—Cat; all the cardiac nerves intact; tracheotomy; canula in left jugular; right carotid used for observation.

Time	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
12.45.30	61	185	1. 9.15	45	70	1.18.15	54	119 S.
0.025 grm. sang. sulph.			1. 9.45	28	105 S.	1.18.30	46	90
12.46. 0	38	135	1.10. 0	36	110	1.18.45	53	70
12.46.15	25	100	1.12.30	42	95	1.19. 0	49	54
12.46.45	31	115 S. ¹	0.0125 grm. injected.			1.25.15	51	94
12.49.15	43	140	1.13. 0	43	95 S.	0.025 grm. injected.		
1. 7.30	50	110	1.13.15	47	81	1.25.30	43	90
0.0125 grm. injected.			1.14. 0	51	109 S.	1.26. 0	42	54
1. 8.45	45	95	1.18. 0	51	117	0.0125 grm. injected.		
1. 9. 0	28	88	0.025 grm. injected.			1.27.45	33	39

Observation suspended. Dead at 1.30.

Expt. II.—Rabbit; same conditions as preceding.

Time.	Pulse.	Pressure	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
10.49. 0	37	122	11.0. 0	37	108	11.19. 0	46	101
0.0125 grm. sang. sulph.			11.1.15	31	110	0.025 grm. sang. sulph.		
10.49.30	24	120 S.	0.0125 grm. sang. sulph.			11.19.15	35	90 S.
10.49.45	35	112	11.1.45	24	112 S.	11.19.45	38	67 S.
10.50. 0	48	110	11.2. 0	29	117	11.20. 0	39	41
10.51.30	40	109	11.2.15	30	130	11.20.15	40	20

Heart dead at 11.20.45.

Expt. III.—Cat; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
2.12.45	45	142	2.13.15	34	90	2.16.15	51	73
0.025 grm. sang. sulph.			2.13.30	30	71	2.17.15	46	70
2.13. 0	41	137	2.14. 0	40	118 S.			

Observation suspended.

Expt. IV.—Small cat; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
11.50.30	59	123	11.51.45	66	56	11.59. 0	43	30
0.025 grm. sang. sulph.			11.58.45	54	44	11.59.30	44	8
11.51. 0	45	76 S.	0.025 grm. sang. sulph.			12. 0. 0	49	10

Observation suspended. Dead at 12.30.

¹ Struggling.

Expt. V.—Cat; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
2.0.45	38	155	2. 4.15	22	153	0.0125 grm. sang. sulph.		
0.0125 grm. sang. sulph.			2. 6.30	18	121	2.24. 0	18	97
2.1.15	48	173 S.	2. 6.45	17	111	2.24.15	25	124 S.
2.1.30	43	180	2. 9.15	21	84	2.24.30	22	147
2.2.45	33	172	2.23.30	15	75	2.25. 0	26	172

Observation suspended.

It may be noticed in the preceding experiments that there is always, sooner or later, a decided fall of blood tension and a considerable slowing of the pulse, this condition being produced immediately by a large dose, usually followed by a rise of both, while after smaller doses have been given, the rise appears first. It will be further noticed that in almost all the instances in which a fall occurs first, followed by a rise, that rise is accompanied by struggling. It remains to be determined what is the relation between the struggling and the increased blood-tension. Is the struggling the cause of *both* the increased pressure and pulse, or does the high blood-tension cause struggling, and consequently a more rapid heart's action? In other words, what elements of these observed facts are due to sanguinarina directly, and what to the struggling which it causes? It is well known that violent muscular movements will increase the rapidity of the heart's action, but as to whether the struggling is the cause of the augmented blood-pressure directly, or *vice versa*, remains to be seen. This can be determined by excluding the possibility of struggling by curare; if now a rise of blood-pressure or of the heart's action occur, that result must be due to the sanguinarina directly. In my experiments where curare was used, artificial respiration similar to normal was kept up by an apparatus on the principle of Sprengel's blower, the current of air being broken at regular intervals by a metronome and electro-magnet. I made ten experiments under curare to discover the general action of sanguinarina. They all gave similar results. In each experiment merely enough curare was given to prevent respiration, usually about 1 c. c. of a 1 per cent. solution, and in all cases it was injected into the jugular and towards the heart.

Expt. VI.—Very small cat; all the cardiac nerves intact; tracheotomy; curare; artificial respiration; canula in left jugular; observation in carotid.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
12.45.15	60	88	0.0125 grm. sang. sulph.			1.0.15	50	70
0.00625 grm. sang. sulph.			12.53.45	55	57	1.0.30	49	56
12.45.30	61	93	12.54.45	57	96	1.0.45	48	51
12.46.15	60	135	12.55. 0	56	120	1.1.30	49	45
12.47. 0	59	117	0.025 grm. sang. sulph.			1.4.30	47	63
12.47.15	58	102	12.55.30	59	75	0.025 grm. sang. sulph.		
12.47.45	57	84	12.55.45	50	57	1.5.15	43	80
12.48.15	55	70	12.57. 0	50	48	1.5.45	45	75
12.48.45	57	67	1. 0. 0	51	74	1.6.30	45	60
12.49.15	55	61	0.025 grm. sang. sulph.			1.7.15	45	55

Observation suspended. Dead at 1.9.

Expt. VII.—Cat; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure
12.30.30	32	140	12.31.15	44	82	12.32. 0	32	46
0.1 grm. sang. sulph.			0.05 grm. sang. sulph.			12.32.15	31	40
12.30.45	31	130	12.31.30	38	52			
12.31. 0	46	125	12.31.45	34	47			

Observation suspended. Heart dead at 12.34.0.

In Experiment VI., it is seen that in a very small cat under curare, a proportionately small dose of sanguinarina causes a rise in blood tension, followed by a fall, while the pulse steadily decreases in rapidity. Again, a second larger dose causes a fall of both pulse and pressure, unaccompanied by any rise. In Experiment VII., very large and repeated doses caused great and instantaneous fall of pressure, while the pulse is not as much affected. By these observations we can account for the variations observed in those instances where no curare was given. In the first place, it is seen that the secondary rise which occurred after a large dose of sanguinarina, and which was always accompanied by struggling, as in Experiment I., was really due to that struggling, because when curare prevented struggling, no such rise appeared. In the same manner the increase in the pulse can be accounted for, as it only appeared in those experiments where no curare was used, and even then only when accompanied by struggling, while after curare has been given, the pulse always falls, because struggling, its exciting cause, has been removed. As, even when the animal is curarized, there appears in certain instances a rise in blood tension, it is evident that in *every* instance in which a rise appeared when no curare had been given, that rise could not have been due to struggling; there must be some additional cause. It will be seen that every time a rise occurred in animals which had been curarized, it was after a *small* dose had been given and usually early in the experiment, the same dose, possibly, when repeated, causing a fall. Now, this is only what might be expected from our knowledge of the action of other poisons. Almost every toxic agent (*e. g.* fever poison), which produces its results by a paralysis of any tissue or organ, produces an initial stage of irritation of that tissue or organ, and this stage of irritation is more marked after small doses than after large. So also with sanguinarina; it may reduce blood pressure by paralysis of the vaso-motor system, or of the heart, while irritation of either of these organs will cause a rise, and if what I have stated is true, it is rational to expect that the paralysis of either of these nervous centres would be preceded by a stage of irritation. This is still further rendered probable from the circumstances under which the rise occurs in this case; it is only, in curarized animals, after the administration of small doses, and is even then soon followed by a fall, while large doses cause immediate paralysis either of the heart or vaso-motor system, and therefore an immediate fall. So, then, it is probable that sanguinarina in small doses causes a rise in blood pressure by the irritation of those nervous centres through whose paralysis

its subsequent fall is effected. I have already proved that the struggling is of spinal origin. I have proved now that the general action of sanguinarina on the circulation is to reduce the frequency of the pulse, and to diminish blood tension; it now remains to be seen through what nervous agency these results may be obtained. The circulation is influenced by the irritation or paralysis of various nervous apparatus. Prominently, the pulse may be reduced through central or peripheral irritation of the pneumogastriacs, or by directly acting on the ganglia of the heart; the blood pressure may be reduced by paralysis of the vaso-motor system, or by debility of the cardiac ganglia. We will study these in turn.

I. Action on the Pneumogastriacs.—It is evident that a condition of irritation or of paralysis of these nerves must exist if they are affected by the action of sanguinarina.

Expt. VIII.—Rabbit; vagi prepared; tracheotomy; canula in left jugular; right carotid used for observation.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
3.14.45	72	84		3.16. 0	75	68	
3.15. 0	64	86	0.025 grm. sang. sulph.	3.16.15	61	60	Vagus irritated 5". Weak induction current.
3.15.15	51	86	Struggling.	3.16.30	71	57	
3.15.30	67	88	"	3.16.45	74	56	
3.15.45	73	67		3.17. 0	74	56	

Observation suspended.

Expt. IX.—Cat; same conditions as preceding; curare; artificial respiration, etc.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
10.35.15	55	80		10.46.30	31	68	Vagus irritated 9". Stronger current.
10.35.30	56	79	0.0125 grm. sang. sulph.	10.46.45	41	56	
10.35.45	54	106		10.48.15	51	60	0.025 grm. sang. sulph.
10.36. 0	53	150		10.55.15	44	40	
10.38.30	54	125		10.55.30	32	40	Vagus irritated 9".
10.39.15	52	105		10.55.45	39	36	0.05 grm. sang. sulph.
10.39.30	41	116	Vagus irritated 15". Weak induction current.	11.10.30	45	40	
10.39.45	46	103		11.10.45	40	42	Vagus irritated 15".
10.40. 0	51	86		11.11. 0	45	40	
10.46.15	50	88					

Observation suspended.

These experiments prove the vagi nerves are not paralyzed by sanguinarina. It is next to be determined whether the reduction in the pulse which is caused by sanguinarina is due to its irritant effects on these nerves, and if so, whether through irritation of their peripheral or central terminations. Here, again, a process of exclusion is necessary. By the administration of a small dose of the sulphate of atropia, it is possible to paralyze the cardiac extremities of the pneumogastriacs without interfering with the functions of any other nerve; if, now, in such a case, sanguinarina still slows the pulse, it evidently cannot be through irritation of the periph-

eral ends of these nerves, for they are already paralyzed by atropia. The following experiments will decide this point.

Expt. X.—Large cat; vagi paralyzed with atropia, as tested with strong induction currents, tracheotomy, etc. etc.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
2.19.30	63	200	3.20.30	54	128	3.2. 0	44	87
0.05 grm. sang. sulph.			3. 1.15	57	163	3.2.45	39	53
2.19.45	57	178 S.	0.05 grm. sang. sulph.			3.3.15	35	57
2.20. 0	62	163	3. 1.30	52	127			

Observation suspended.

Expt. XI.—Cat; same conditions as preceding; curare, etc. etc.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
4.18.15	61	165	4.19.30	56	200	0.025 grm. sang. sulph.		
0.0125 grm. sang. sulph.			4.20. 0	53	176	4.31.0	51	110
4.18.30	56	158	4.24. 0	55	162			

Observation suspended.

By these it is proved that sanguinarina does not slow the heart by stimulation of the peripheral ends of the pneumogastriacs. To determine whether the poison acts on the central ends of the vagi, all that is necessary is to divide both these nerves in the neck, when of course all possibility of central irritation affecting the heart is excluded.

Expt. XII.—Rabbit; vagi cut; curare; artificial respiration, etc. etc.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
12.14. 0	58	95	12.14.45	52	125	0.0125 grm. sang. sulph.		
0.025 grm. sang. sulph.			12.15.15	57	83	12.19.45	50	43
12.14.30	55	115	12.19. 0	53	57	12.20.30	39	29

Heart dead 12.30

Expt. XIII.—Rabbit; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
1.30.45	58	102	1.35.45	60	74	1.37.15	33	33
0.025 grm. sang. sulph.			0.0125 grm. sang. sulph.			1.37.45	27	28
1.31.15	49	106	1.36.15	52	70	1.38. 0	26	27
1.32. 0	58	98	1.36.30	51	55			
1.33. 0	60	71	1.37. 0	39	30			

Observation suspended. Heart dead at 1.40.

I have made ten experiments under this head, and in all of them there was marked reduction in the pulse. *Expt. XIII.* is the only one in which the rapidity of the heart's action ever exceeded normal, and even there it is very slight and transient. In all the experiments so far, the conclusions as regards general action still hold. I have proved the pneumogastriacs are not paralyzed by sanguinarina, and I have proved that its characteristic action on the pulse and pressure are not due either to central or peripheral excitation of these nerves; consequently the cardio-inhibitory functions of the vagi are not interfered with by this poison, so the pulse must be reduced by action on the heart itself. Leaving for the present the study of the pulse, I will next endeavour to ascertain through what agency sanguinarina produces its reduction in blood tension. As I

have stated, it may be due to paralysis of the vaso-motor apparatus or of the heart itself. We will study these in turn.

II. *Action on Vaso-motor System.*—The action of the vaso-motor system upon the circulation is purely reflex; when its influence is interfered with, and the intensity of its action diminished, this effect may be produced in three ways: 1st. By loss of function of the afferent, the sensory nerves. 2d. By diminished tonus of the vaso-motor centre itself, etc. 3d. By loss of function of the efferent vaso-motor fibres. We will study these in turn.

1. One of the most constant effects of the irritation of a sensory nerve is a rise in blood pressure, caused by reflex irritation of the vaso-motor centre. I have already shown that the conductive power of the sensory nerves is not interfered with by this poison as regards conduction of sensations; we will see whether the afferent vaso-motor fibres are interfered with; whether this rise can be produced when the animal is under sanguinarina.

Expt. XIV.—Small cat; vagi cut; tracheotomy; curare; artificial respiration, etc. etc. Sciatic prepared.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
11.30.45	56	100		11.49.30	55	86	
11.31. 0	55	87	0.05 grm. sang. sulph.	11.49.45	55	89	Sciatic irritated 7", coil at iv.
11.32. 0	52	53		11.50. 0	56	87	0.05 grm. sang. sulph.
11.38. 0	53	96		11.52. 0	42	52	
11.38.45	55	100		11.52.15	41	50	
11.39. 0	55	105	Sciatic irritated 9", coil at ix.	11.52.30	40	51	Sciatic irritated 18", coil at iv.
11.39.15	53	101		11.52.45	41	50	

Observation suspended.

From this it is evident that the tonus of the vaso-motor centre is very much diminished to indirect irritation, a rise of only a few millimetres following a prolonged irritation with a strong current. Now, this may be due to paralysis of the afferent vaso-motor fibres, but as I have shown the sensory nerves are not paralyzed, it will be rational to conclude these vaso-motor fibres are not affected, especially if the vaso-motor centre is paralyzed to direct irritation.

2. This can be determined by several methods. One is to screw one of Ludwig's gimlet electrodes into the occiput, and the other into the atlas, when an electric current will directly irritate the vaso-motor centre itself. The afferent and efferent cardiac nerves in the neck must be cut to prevent extension of the current and implication of the other cardiac apparatus. I have made five of these experiments.

Expt. XV.—Cat; all the cardiac nerves in the neck cut. Sciatic prepared; Ludwig's electrodes in occiput and atlas; tracheotomy; curare, etc. etc.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks
4.17.15	69	135		4.26.30	65	83	0.0375 grm. sang. sulph.
4.17.30	67	130	0.025 grm. sang. sulph.	4.30.15	58	43	
4.18. 0	64	100		4.30.30	59	42	Centre irritated 9'', coil at v.
4.19. 0	63	73		4.30.45	57	41	
4.21.15	66	76		4.37.15	54	28	
4.21.30	66	75	Sciatic irritated 11'', coil at x.	4.37.30	55	29	Centre irritated 13'', coil at v.
4.21.45	65	76		4.37.45	55	29	
4.23.15	68	79		4.39. 0	54	25	
4.23.30	66	75	Centre irritated 10'', coil at x.	4.39.15	52	25	Centre irritated 12'', coil at 0.
4.23.45	66	77		4.39.30	53	25	

Here it is seen that the vaso-motor centre is completely paralyzed to direct irritation, no rise following prolonged irritation with strong currents: in some cases I found the pulse quickened after these irritations, this was probably caused by the transmission of the current to the accelerator nerves which arise in the brain, and pass down the cord to the heart. Another method of applying direct irritation has been shown by Nawalichin (*Centralblatt*, 483): he has found that in curarized animals with divided vagi and sympathetics, ligation of both carotids causes a quickened pulse, and an increase of 60 per cent. in the blood pressure. This rise is due to irritation of the vaso-motor centres from diminished blood supply; this is proved by the fact that it does not appear after the cord has been divided. We will now see if a rise can be produced in this manner after sanguinarina has been given. The animal is prepared as in preceding experiments, the crural artery being connected with the manometer, while the carotids are loosely encircled with threads; by raising these simultaneously, the circulation in these vessels is arrested for the time, and anæmia of the vaso-motor centre occurs.

Expt. XVI.—Cat; carotids prepared; curare, etc. etc.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
12.14.15	64	150		12.23.45	59	140	
12.15. 0	66	168	Carotid compr'd 7''.	12.24. 0	61	155	Carotid compr'd 6'', 0.025 grm. sang. sulph.
12.15.15	67	164	0.025 grm. sang. sulph.	12.45. 0	58	46	
12.16.30	51	95		12.45.15	59	46	Carotid compr'd 7''.
11.21. 0	41	93		12.45.30	60	46	
12.21.15	49	108	0.025 grm. sang. sulph.				

Expt. XVII.—Cat; same condition as preceding.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
1.3.45	50	87					0.05 grm. sang. sulph.
1.4. 0	46	101	Carotid compr'd 23''.	1.15.30	39	62	
1.4.15	39	90		1.15.45	40	62	Carotid compr'd 34''.
1.4.45	50	70	0.025 grm. sang. sulph.	1.16. 0	40	62	

Observation suspended.

Here it is seen that compression of the carotids caused a considerable rise in blood tension, but after sanguinarina had been given, irritation of

the centre by anæmia thus produced had no effect, except in one instance, which occurred when high tension had already been produced by a small dose. This fact goes to prove the statement already made that this initial rise is due to irritation of the vaso-motor centre, while now by two methods I have proved that the vaso-motor centre is paralyzed by large doses of this drug, so accounting for the low pressure which it then produces. There is a third method. Ludwig and Cyon, the discoverers of the "depressor" nerves, stated that they produced their characteristic action by paralyzing the vaso-motor centre. When the central end of one of these nerves is irritated (the vagi being divided), the blood pressure is greatly reduced without interfering with the pulse; this is caused, not by any action on the heart, but by a dilatation of the bloodvessels, produced by the reflex inhibitive or paralyzing action which this nerve, when irritated, exerts over the vaso-motor centre. If now this centre be already paralyzed by sanguinarina, the low tension ensuing from this cannot be further reduced by irritation of the depressor.

Expt. XVIII.—Small cat; depressor prepared; vagi cut; curare, etc. etc.

Time.	Pulse.	Pres.	Remarks.	Time.	Pulse.	Pres.	Remarks.
11.5.65	62	85		11.11.15	52	25	
11.5.30	63	60	Depressor irritated 15'', coil at iii.	11.11.30	52	25	Depressor irritated 15'', coil at iii.
11.7.30	55	67	0.024 grm. sang. sulph.	11.11.45	50	25	
11.9. 0	52	30		11.12.15	49	24	Depressor irritated 28'', coil at 0.
				11.12.20	51	24	

Observation closed.

I have made two such experiments, which furnished similar results; irritation of the depressor normally caused a fall of pressure, but after a low blood-tension had been already produced, irritation of the depressor had no effect. I have now proved that the centre does not respond to either direct or indirect irritation after sanguinarina has been given. Since, now, the reflex action of the vaso-motor centre is evidently interfered with by this poison, we must look for the cause in the paralysis of the afferent or efferent nerves, or of the centre itself. Evidently the fault does not lie with the sensory nerves, for I have proved they retain their functions, and the same effect is observed after direct as well as indirect irritation of the centre. The following experiment has been made to determine whether the functions of the efferent vaso-motor fibres still remain:—

Expt. XIX.—A rabbit was placed on Czermak's holder, and the vessels of the ear auricle found normal; 0.05 grm. sang. sulph. injected into external jugular; soon the auricular vessels became much plainer. Then the cervical sympathetic was divided, when a more marked dilatation ensued; the pupil on the same side now measured 3 mm. The central end of the sympathetic was then irritated, coil at 0, when the vessels immediately contracted, and the pupil measured 10 mm.

3. Here it is evident that the efferent vaso-motor nerves are not paralyzed by sanguinarina. If, therefore, both the afferent and efferent nerves are

still intact, and sanguinarina prevents a rise of pressure under direct and indirect irritation of the vaso-motor centre, it is evident this drug causes a state of diminished tonus of that centre. Now, as paralysis of the vaso-motor centre is an important element in producing low arterial pressure, from the consequent dilatation of the vessels, so here we have one cause for the low blood-tension which sanguinarina produces.

III. *Action on the Muscular Structure of the Heart or its contained Ganglia.*—In order to confine the action of a drug to the heart it is necessary to remove all influence of the cerebro-spinal system; this is accomplished by dividing all the afferent and efferent cardiac nerves, and by removing the influence of the vaso-motor centre and accelerator nerve by section of the cord.

Expt. XX.—Cat; vagi, sympathetics, and depressor nerves divided; cord cut between occiput and atlas (verified by post-mortem examination); bleeding checked with bovista; tracheotomy; artificial respiration; canula in left jugular; right carotid used for observation.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
1.3. 0	51	45	1. 7. 0	49	49 S.	0.05 grm. sang. sulph.		
0.025 grm. sang. sulph.			1. 8. 0	49	30	1.19.30	48	46 S.
1.3.15	51	41	1.13. 0	48	25	1.20. 0	46	31
1.3.30	50	39 S.	1.14.15	48	41 S.	1.20.30	45	38 S.
1.4. 0	49	34	0.025 grm. sang. sulph.			1.21.30	44	33
1.4.30	47	30	1.15.15	50	28	1.26.30	40	21
1.5. 0	46	28	1.15.45	46	47 S.			
1.6.30	47	27 S.	1.16.45	45	25			

Observation suspended.

Expt. XXI.—Cat; same conditions as preceding. Curare, etc.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
11.37.15	40	32	11.38. 0	38	32	11.39. 0	30	18
0.025 grm. sang. sulph.			11.38.15	38	34	11.39.15	22	15
11.37.30	31	35	11.38.30	35	23			
11.37.45	39	40	11.38.45	34	20			

Heart dead at 11.40.

Expt. XXII.—Cat; same conditions as preceding.

Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.	Time.	Pulse.	Pressure.
12.38.15	69	60	12.39. 0	58	43	12.40. 0	50	21 ¹
0.0125 grm. sang. sulph.			12.39.15	56	30	12.40.15	47	19
12.38.30	69	55	12.39.30	55	20	12.41. 0	30	10
12.38.45	61	48	12.39.45	53	23	12.41.45	23	4

Here again the same sequence of results is observed with the cord and cervical cardiac nerves cut as in the general experiments when all were intact, viz., fall of pulse and pressure after all doses, in one instance the fall of pressure being preceded by a slight rise. In *Expt. XXII.* it is seen that irritation of the sciatic is followed by no rise. Here also it is seen that when no curare is given, muscular movements interfere with the steady fall of pulse and pressure; this fact also proves that the convulsions are of spinal origin. From all these experiments we are prepared to conclude, in accordance with the present state of physiology, that the pulse is

¹ Sciatic irritated 12'', coil at 0.

reduced by the action of this poison on the heart alone, while pressure is reduced by paralysis of the vaso-motor centre and by action on the heart. The character of that action on the heart we will now study. We have seen the introduction of sanguinarina into the circulation followed by progressive difficulty in the movement of the heart; but is that difficulty due to the direct action of the poison on the heart—is sanguinarina a true “heart poison?” By these agents are meant those drugs whose principal and primitive effect is a notable enfeeblement of the heart, and which have the power of arresting those movements, and thereby determining the death of the animal, even though the other functions are still executed. This is the strict meaning of this term, but it is evident that such a limitation is practically impossible, as all of the so-called cardiac poisons interrupt the action of the heart in the midst of other functional troubles more or less apparent. But even with this allowance sanguinarina is not strictly a heart poison, because, as I shall show, it kills by preventing respiration, and some time after the animal has ceased to breathe the heart continues to beat. If, however, artificial respiration is kept up, then this drug is a true heart poison. I have studied the action of this poison on the heart chiefly in frogs, because in them it is easy to lay the heart bare without endangering their lives, and because under these circumstances the heart can be kept under observation for many hours. When a dose proportionate to the size of the animal is given hypodermically, there may occasionally be noticed a slight acceleration of the heart; but this soon disappears, and the heart now beats markedly slow and irregular. The ventricular systoles become partial and incomplete, and sometimes the systole of the ventricle is preceded by two auricular contractions; then, after a variable time, dependent upon the dose and the size of the animal, the ventricle ceases to contract, and recoils upon itself, and remains immobile in a condition of systole; it is yellowish-white and absolutely free from blood. The rhythmical movements of the auricles may continue for a few moments, but they visibly become weaker, and soon become distended with blood. They then cease to contract, and remain forcibly dilated and gorged with black blood, contrasting strongly with the ventricles, which are, as I have said, pale and contracted. Up to this time, occasionally, the frog has not lost completely the vivacity and energy of its movements, and, if loosed, will jump with vigour, even though its heart no longer beats. The muscles are not long, however, in losing their power; their contractility diminishes little by little. This loss of power is not due to the mere withdrawal of the circulation, for a frog in whom all the vessels are ligated as they leave the heart, will retain its muscular contractility long after the muscles are completely inactive in a frog of the same size and species which was poisoned with sanguinarina at the time of ligature of the vessels of the other. This fact shows this drug must have some action on muscular structure. These effects of san-

guinarina on the heart may be explained through action on the inherent cardiac ganglia, or by affecting the cardiac muscular tissue. I think I have proved the cardiac afferent and efferent nerves are unaffected by this poison, and as these nerves are in the main influenced by the same agents which act on the ganglia, it might be reasonable to suppose that the ganglia, in this instance at least, were not implicated, and as this poison interferes with the action of other striated muscles, it would be only natural to imagine it acted on the muscular tissue of the heart. If the contractility of the cardiac muscle of a frog is examined, in whom the movements of this organ are just about to be arrested by sanguinarina, it is found that it is already much diminished; excitation of the auricular tissue by means of a faradic current only awakens feeble contraction, and a few minutes later the same current has no effect. Then, too, the local administration of sanguinarina greatly slows and ultimately stops the heart's action, both when the heart is excised and placed in a solution of the poison and when a few drops are placed within the pericardium, the heart remaining *in situ*. Then, too, I have demonstrated to my own satisfaction, by tracings obtained by a lever attached to the heart's apex, that the cardiac contractions under this poison become absolutely more feeble. Although of course it is impossible absolutely to demonstrate that sanguinarina paralyzes the muscular structure of the heart and leaves its ganglia intact, I think it probable that such is the case. For I have shown the cardiac nerves are untouched by this poison, and all those poisons whose action is claimed to be on the cardiac ganglia, certainly act on these nerves also, and so, more by analogy than by anything else, the ganglia are said to be affected. Now, if such a line of argument holds in the case of the other poisons, the same principle should be accepted here. Sanguinarina does not act on any of the cardiac nerves, and does act on all the muscles; so here I think it reasonable to conclude that it produces its typical effects by action on the muscular tissue of the heart. Besides, as long as the heart responds to electric excitation, it responds rhythmically, and this would not be the case if the ganglionic system was affected.

Respiration.—According to the physiology of respiration, as at present taught, any modifications in character, frequency, duration, or rhythm which occur in the respiratory movements must be due to the action of the poison on the pneumogastrics or on the respiratory centre, the possibility of the efferent respiratory nerves being affected by the drug in question, having already been excluded by the experiments in which I proved that the motor nerves were not implicated. By the same series of experiments, it is also rendered improbable that the other afferent nerves, the sensory nerves, are at all concerned. So then, the modes of action remaining possible are by the trunks of the vagus and the respiratory centre. Therefore my experiments, to prove anything, must exclude one of these possibilities. It is evident that it will be impossible to remove the influence of the respiratory

centre, but by dividing the vagi, any impression made upon these nerves, whether an abolishment or exaggeration of function, will be prevented from affecting the respiratory centre. For example, suppose sanguinarina caused an irritation of the vagi; now, inasmuch as these nerves are mere conductors of impression, are afferent sensory nerves, that irritation can produce no result if it is prevented from reaching the respiratory centre. Again, on the other hand, if the pneumogastriacs are paralyzed by this substance, the only result which would appear would be merely similar to that obtained by section of these nerves. We will now examine into the action of sanguinarina on the respiratory apparatus. I have made ten experiments, of which I give the following:—

Expt. I.—Cat; all respiratory nerves intact; tracheotomy; canula in left jugular; trachea connected with Marey's tympanum; registering on Ludwig's registering apparatus.

Time.	Resp.	Remarks.	Time.	Resp.	Remarks.
11.27.15	32		12.20.30	1	Counted in periods of 30".
11.27.30	24	.02 grm. sang. sulph.	12.22. 0	1	
11.27.45	12		12.24. 0	1	Counted in periods of 60".
11.28. 0	11		12.26. 0	2	Pause very much lengthened, lasting 57"; respiratory movements only 3".
11.29. 0	10		12.30. 0	1	
11.30. 0	6		12.35. 0	2	
11.37. 0	11		0.025 grm. sang. sulph. Respiration gradually becoming shorter and shallower until 12.35.0. Dead. Chest opened. Heart 22 in 15".		
11.40.15	15	0.024 grm.			
11.40.30	9	Pause after expiration becoming prolonged.			
11.40.45	6				
11.43. 0	5	Struggling.			
11.52.45	4				
12. 1.45	8	0.024 grm.			
12. 2.15	3				

Expt. II.—Rabbit; same conditions as preceding.

Time.	Resp.	Remarks.	Time.	Resp.	Remarks.
12.35. 0	10		12.53.30	3	
12.35.15	17	0.0125 grm.	1. 5. 0	2	Respiration now counted in periods of 60".
12.35.30	28	Struggling.	1. 6. 0	1	
12.36. 0	30		1. 7. 0	2	
12.49. 0	17	0.025 grm.	1. 8. 0	1	
12.49.30	16		1. 9. 0	3	Respiration ceased; chest opened; heart beating irregularly. Ventricle 48 per min. Auricles 123 " "
12.50. 0	20	Struggling.			
12.50.45	11	Pause becoming lengthened.			
12.52. 0	9				
12.53. 0	7	Spasmodic respiration.			

In these observations it is seen that sanguinarina causes slowing of the respiratory movements; after small doses have been given, there is sometimes noticed an increase in their number, which increase, however, is usually accompanied by convulsions, so it cannot positively be decided whether they are both effects of the same cause, or whether the struggling causes the increased rapidity of respiration. Here curare is of no use. It is also noticed that respiration is slowed, not so much by any alteration in duration of expiration or inspiration, as by lengthening the pause which follows expiration. This fact seems to point at increasing loss of tonus of

the respiratory centre. Sometimes I have noticed a peculiar halt in the middle of the expiratory movement, similar to that which often appears after section of the vagi when no poison has been given.

Expt. III.—Small cat; vagi cut; tracheotomy, etc.

Time.	Resp.	Remarks.	Time.	Resp.	Remarks.
12.40.15	5		12.55.45	7	Spasmodic respiration.
12.40.30	6	0.06 grm. injected.	12.56. 0	5	Expiratory pause prolonged.
12.40.45	1				
12.41. 0	2		12.57. 0	2	
12.43. 0	2		12.58. 0	3	
12.44. 0	3		12.59. 0	3	
12.55. 0	4		12.59.30	2	
12.55.30	0	0.6 grm.	12.59.45	1	Dead.

Heart 48 per minute.

Here, also, the same results are produced—respiratory movements slowed by lengthening the pause after expiration. Now, of course, this could not be due to any irritation of the respiratory fibres of the pneumogastric, for the same results appear after section of these nerves. It is probable it is not due to irritation of the superior laryngeal nerve, for when death is produced through excitation of this nerve, the diaphragm is in a condition of relaxation; such a state does not exist here. The animal dies slowly and gradually, respiration being slowly arrested by progressive lengthening of the expiratory pause, all the muscles, as far as I have been able to observe, being generally relaxed. These results cannot be due to paralysis of the vagi, as they appear after section of these nerves. Hence, sanguinarina is a respiratory poison, which causes death through paralysis of the respiratory centre, while the heart still beats after all respiratory movements have ceased.

Muscular System.—Weyland (*Beiträge zur Anat. u. Phys.*, Funf. B. erst. H., p. 55) and Harnack (*Archiv für Exper. Path. u. Pharm.*, Bd. iii., p. 44) have both noticed that sanguinarina, when applied locally, interferes with muscular contractility, but neither of these observers states what irritant they used, so no idea can be formed of the strength of excitation which the muscles received. I have already stated what my instruments of excitation were. In my experiments, which were ten in number, I dissected out the gastrocnemius from each leg of a frog; one was placed in a watch glass containing distilled water, the other in a neutral solution of the sulphate of sanguinarina, 1 c. c. = .025 grm. Irritation was applied directly to the muscular tissue. "S" stands for sound muscle; "P" stands for poisoned muscle. The figures represent the separation of the secondary from the primary coil, Dubois Raymond instrument.

Expt. I.—1.35, s. at 13 c.; p. at 13 c. 1.40, s. at 13 c.; p. at 9 c. 1.45, s. at 9 c.; p. at 5½ c. 1.50, s. at 7½ c.; p. at 2 c. 1.58, s. at 7 c.; p. not at 0 c. 2.50, s. at 6.5 c. 4.50, s. at 0.

Expt. II.—10.45, s. at 27 c.; p. at 27 c. 10.47, s. at 27 c.; p. at 23 c. 10.50, s. at 27 c.; p. at 21 c. 13.55, s. at 27 c.; p. at 12. 10.57, s. at 27 c.; p. at 9 c. 11, s. at 27 c.; p. at 3. 11.10, s. at 27 c.; p. not at 0.

Expt. III.—11.15, s. at 27 c.; p. at 27 c. 11.18, s. at 27 c.; p. at 22 c. 11.23, s. at 27 c.; p. at 15 c. 11.28, s. at 27 c.; p. at 8 c. 11.36, s. at 27 c.; p. not at 0.

In these it is seen that the muscles which were placed in a solution of sanguinarina entirely lost their contractility in a few minutes, while those which were placed in water retained their contractility usually for several hours. This must be due to the specific action of the drug. As regards the action of this drug when introduced into the circulation, it undoubtedly does diminish their contractility as Harnack has asserted, for the muscles of a frog killed by sanguinarina are much less irritable than those of a frog killed by some other means. This is a rough mode of investigation, and when the blood is prevented from reaching the muscles of one extremity, the contractility in that limb is very little if at all greater than in that limb which has received the poison. It is possible, however, that this may be due to the physical imbibition of the poison into the tissues which had been protected by the ligature. The only variation from the normal curve of muscular contraction produced by sanguinarina is a diminution in intensity of contraction, rendering the ordinates of the curve shorter. This is due to the progressive paralysis of the muscle, and confirms my other experiments on this subject. In studying the muscle curve, I used Marey's comparative myograph, and Foucault's regulator, in the manner laid down by him in his work.

Temperature.—

Expt. I.—Cat.

Time.	Temp.	Remarks.	Time.	Temp.	Remarks.
12.34		Thermometer inserted into rectum	1. 3	40 $\frac{1}{10}$	
12.39	40.7° C.	A small amount of morphia was given, and after its effects had appeared the pupil measured 9 mm.	1. 5	40	
			1. 7	33.9	
			1. 9	39.8	
			1.11	39.7	Struggling.
			1.18	39.6	
12.40	....	0.0125 grm. into femoral vein.	1.28	39.5	
			1.35	39.5	0.0125 grm. sang. sulph.
12.43	40.8	Retching; pupils measured 12 mm.	1.36	39.6	Struggling.
			1.39	39.7	Pupils not sensitive to light.
12.47	40.7	Spasmodic movement of head.	1.50	39.6	0.025 grm. sang. sulph.
			1.53	39.5	
12.49	40.6		1.56	39.4	0.0125 grm. sang. sulph.
12.53	40.5		2. 7	39.1	Slight convulsions.
12.55	40.4		2.17	38.9	Respiration ceased. Heart beating feebly.
12.57	40.6	Convulsions.			
12.59	40.2				
1. 2	40.2				

Expt. II.—Cat.

Time.	Temp.	Remarks.	Time.	Temp.	Remarks.
1.55	39.8	0.0375 grm. sang. sulph.	2.12	38.6	0.0375 grm. sang. sulph.
1.58	39.6	Struggling.	2.16	38.	
2.	39.4		2.18	37.8	
2. 5	39.2		2.22	37.4	0.0375 grm. sang. sulph.
2. 6	39.		2.28	36.8	
2. 8	38.8		2.37	36.	Respiration ceased.

Heart beating 25 times in 15"; vagus has still inhibitory power over heart; no peristaltic movement: pupils dilated; section of cervical sympathetic, as well as irritation, both before and after section; coil at 0; produced no alteration in size of pupil; oculo-motor nerve not irritable; coil at 0.

I have made ten such experiments, in all of which this marked fall appeared.

Glandular System.—I have studied the action of this drug on the liver in several experiments. I used a modification of Röhrig's method, proposed by Rutherford and Vignal, but without noticing any change in the quantity or quality of bile. The salivation which this drug produces is of such constant occurrence under all circumstances, that it is probably a specific action of the drug on the salivary glands, but my time has not permitted me to investigate it.

From 153 experiments made with this alkaloid on cats, dogs, rabbits, frogs, guinea-pigs, pigeons, etc., I have drawn the following conclusions:—

1. Sanguinarina destroys life through paralysis of the respiratory centre.

2. It causes clonic convulsions of spinal origin.

3. It has no effect on either the motor or sensory nerves.

4. It causes marked adynamia and prostration from its depressing action on the spinal ganglia and muscles.

5. It decreases reflex excitability through irritation of Setschenow's centre, and by ultimate paralysis of the spinal ganglia, from large doses.

6. It produces in cats, dogs, and rabbits, a fall of pulse and blood pressure, the fall of the latter being preceded by a temporary rise after the administration of proportionately small doses.

7. The fall of blood tension is caused by a paralysis of the vaso-motor centre, and by a paralysis of the heart itself, probably of its muscular structure.

8. The temporary rise in blood pressure is due to irritation of the vaso-motor centre, previous to its paralysis, by small doses.

9. The reduction in the pulse is due to direct action of the poison on the heart, through paralysis of its motor power.

10. Sanguinarina has no action on the liver.

11. It causes marked salivation.

12. It slows the respiratory movement by prolonging the pause after expiration.

13. This reduction is caused by loss of tonus of the respiratory centre.

14. Small doses cause an irritation of the respiratory centre, and consequently an increase in the number of respiratory movements.

15. Applied locally, sanguinarina soon causes complete paralysis of striped muscular fibre.

16. It always causes dilatation of the pupil.

17. It is an emetic.

18. It always lowers the temperature.

19. When introduced into the circulation, it diminishes muscular contractility.

The above experiments were made in the Physiological Laboratory of the University of Pennsylvania, under the supervision of the Demonstrator of Experimental Physiology, Dr. Isaac Ott.

ART. IV.—*A Contribution to the Pathology and Therapeutics of Contused Wounds of the Eyeball.* By CHARLES S. BULL, M.D., Ophthalmic Surgeon to Charity Hospital; Assistant Surgeon to the New York Eye Infirmary.

THE following remarks are based upon the clinical features manifested by twenty-five cases of contused wounds of the eye; the observations recorded extending generally from the time of injury to the final discharge of the patients from treatment. The question of serious injury to the media and internal coats of the eye, with diminution or entire loss of the visual power, without any external wound, is one of great importance, and unfortunately of frequent occurrence; and a careful and long-continued observation of the course and result of such injuries may perhaps be of some help to us in our therapeutics, and enable us to form a more correct prognosis.

In considering this class of injuries, the state of the peripheral nerves is of some importance, as well as the tunics and media of the organ of vision. In mechanical injury of nerves, Weir Mitchell tells us that "a certain share of functional loss depends upon the cutting, tearing, stretching, or bruising of nerve-tubes, and to this are soon added congestion, inflammation and sclerosis; so that the remote pathological consequences are very often more serious than the primary hurt." Generally, in contusions, the neurilemma remains unbroken, but often hemorrhages occur within the sheath, and may pass for some distance beyond the seat of injury. It is a not uncommon occurrence that blows upon the eye sometimes involve the supraorbital and infraorbital nerves, and are thus the cause not only of severe attacks of neuralgia, but also of a disturbed innervation of the eyeball, which may lead to disastrous results, independent of those caused directly by the original contusion.

Another almost constant accompaniment of these injuries is intraocular hemorrhage, and its importance varies with its locality and source. A third feature is the direct influence of the contusion upon the retina. The diagnosis of contusion of the retina or commotio retinæ, is generally based upon negative signs, and can only be made by exclusion. It was

diagnosticated much more frequently in pre-ophthalmoscopic times than since. But we should look for some localized retinal lesion, and when a visible lesion does not suffice on physiological grounds to explain the disturbance of vision observed, then we may perhaps assume a contusion of the retina. Experience teaches us that a permanent failure of vision, of traumatic origin, can almost, without exception, be explained by anatomical changes. The loss of vision immediately following the injury, which only lasts for a short time, is doubtless due to a narrowing of the retinal arteries.

The changes in the vitreous humour in this class of injuries are of some interest in connection with the prognosis. They may vary from a fine, delicate opacity, due to a general shaking-up of the contents of the eye by the force of the blow, all through the various degrees of inflammatory exudation, up to profuse intraocular hemorrhage from the rupture of some large vessel. The slighter degrees of opacity generally disappear in the course of a few days without any treatment, but with the larger floating or fixed opacities, some of which assume a membraniform character, this is not often the case. They are usually the result of some active inflammatory, exudative process, except in the case of floating blood-clots, and are generally more or less permanent in character. An eye filled with these fixed membrane-like threads is practically useless, even though the other media be clear, but still something may be done towards causing their disappearance by absorption. Here internal medication does scarcely any good, but the local application of electricity will sometimes effect a great deal. The constant current from a battery of from eight to twelve cells, one pole applied upon the closed eyelids, and the other over the sympathetic in the neck, or on the nape of the neck, for ten minutes every day, will in many cases cause a disappearance of the opacities and a clearing up of the vitreous in a comparatively short space of time. Of course this treatment should be resorted to only after all inflammatory symptoms have subsided, and the eye has become perfectly quiet.

The effusion of blood into the anterior chamber is a very common result of contusions of the eyeball, and in the majority of cases the blood is entirely absorbed, provided that there are no grave pathological processes going on in the eye. The absorption often takes place spontaneously, but may sometimes be hastened by cold applications and atropia. The rapidity of absorption varies with the condition of the blood effused. If coagulation has taken place, absorption is very slow and always imperfect, leaving behind it pigment and small clots. This is particularly so in cases of chronic inflammatory disease within the eye. Of course the channels by which absorption takes place, are necessarily the same as those by which the processes of nutrition go on in a state of health, and hence need not be considered.

Very often cases of hemorrhage into the anterior chamber are met with, in which, after all the blood has been absorbed, there still remain some spots upon the anterior capsule, and this, too, without any injury to the capsule or lens. These residua are generally permanent, or at least, last for a long time, and in the end may be the indirect cause of capsular opacity.

In regard to the results of contused wounds of the eye, we cannot always make an unreserved prognosis even after a careful examination of the case, and a full appreciation of the amount of visible injury sustained. With all its delicacy of structure, the eye will sometimes bear a much greater amount of damage than would be thought possible, and yet finally prove a very serviceable organ.

An interesting feature in these cases is the amount of violence the lens will sustain without being injured or even dislocated. It might be supposed that the delicacy of structure of the suspensory ligament of the lens would yield to a very small amount of violence, and yet cases are frequently seen in which the force of the blow has been so great as to fill the eye with extravasated blood, paralyze the muscle and dislocate the pupil, and yet the lens remains *in situ*, and shows no evidence, at least, of immediate injury. It is possible that the direction of the blow exerts some influence in this respect, and that in those cases in which the lens remains in position, the force of the blow has been expended in the direction of least resistance, that is, directly from before backwards, where the eyeball is driven against the yielding orbital fatty tissue, and so escapes some of the direct violence.

In regard to treatment, the great desideratum seems at first to be rather a negative one—not to do too much. With atropia, local blood-letting and occasional resort to the influence of mercury, and enforced quiet in a moderately darkened room, we can do much to counteract the effects of such injuries. Moreover, we should not be in too much of a hurry to advise the enucleation of such an injured eye, simply because vision seems irretrievably lost, and the eye apparently destroyed. Experience teaches us all that by careful and long-continued treatment, some sight may, in many cases, be restored. If the patient can be kept under constant observation, and no signs of sympathetic trouble have as yet appeared, and the injured eye is not certainly destroyed, the best surgery is not to enucleate. But, the moment sympathetic irritation appears, there is but one course to pursue. If the patient cannot be kept under observation, then the best plan is to enucleate at once, and thus avoid the possibility of any future trouble. Rupture of the choroid is a rather uncommon result of contusion of the eye; but yet sometimes occurs when other more delicate constituents of the organ remain uninjured. It has been supposed that at the moment of the occurrence of the injury the ciliary muscle has been strongly contracted, and pulling from its

origin upon the choroid in a general antero-posterior direction, has rendered it tense, and thus, perhaps, more liable to give way to any extraneous violence. However, this is still a matter of theory, and, perhaps, not susceptible of proof. The rupture may be due in individual cases to a preternatural tenuity of the choroid, or to some diseased condition in the membrane, which had not manifested itself to the patient.

The cases that follow are given as briefly as possible, with reference to symptoms, treatment, and results.

CASE I. *Contused Wound of Eyeball; Rupture of Choroid.*—M. B., æt. 36, cartman. On May 9, 1874, received blow on R. E. from a stone, and since then has been entirely blind. Lids at first very much swollen, but when he could open them, found eye full of blood. Admitted to Infirmary May 20, 1874, and then eyeball stone hard, $V = 0$. It was not until one month later that blood in anterior chamber showed signs of absorption, and upper part of iris became dimly visible. Tension diminished and $V =$ perception of light. On August 7, 1874, $V =$ fingers at four feet with nasal half of retina. Blood nearly all-absorbed from anterior chamber, but still a little on capsule. Floating masses in vitreous. Pupil widely dilated upwards, but irregularly downwards and outwards. Membrane over lower part of pupil—fluttering iris. Tension below normal. On Sept. 4, 1874, media comparatively clear, though still some floating membranes in vitreous. Optic disk very clear, and just below and to its outside, a crescentic rupture of choroid with concavity towards disk. Tension still below normal. No sign of any sympathetic trouble. No increase of vision. One month later, tension still at same point, vitreous perfectly clear, $V =$ fingers at ten feet, and general condition of fundus the same. From this time there was no further improvement in vision or visual field. The situation of the choroidal rupture, though not exactly in the macula, still encroached upon it so closely as to render central vision impossible. The lens remained intact, and is one remarkable feature in the case. Another point of interest is very slow absorption of extravasated blood in anterior chamber and vitreous, the period of observation covering space of five months. It is also worthy of notice that no serious inflammatory process resulted from injury, in spite of large floating clots and pupillary membrane.

CASE II. *Contused Wound of Eyeball; Cataract.*—J. M., æt. 27, farmer. Two months before admission, patient received blow on L. E. from barrel-hoop, which caused iritis, posterior synechiæ and cataract. No marks at present of any external wound, and eye is now perfectly quiet and there is no pain. At first pain was excruciating, and he was leeches at temples, and blistered behind the ears and on the nape. Pupil is now distorted and immovable. $V =$ qualitative perception of light. No sympathetic trouble. As field of vision was good, decided to attempt removal of cataract. Peripheral linear incision upwards, a broad piece of iris removed, but in shreds, as it was found very rotten. Lens shrunken and firmly adherent to iris, and extracted with considerable difficulty, but no vitreous lost. Violent inflammation followed, with closure of pupil and increased tension, which lasted three weeks. One month later iridotomy through false membrane with good result, $V = \frac{20}{200}$. No view of fundus obtainable, but vitreous probably filled with mem-

braniform exudations, the result of the inflammation following first operation.

CASE III. *Contused Wound of Eyeball.*—J. T., æt. 19, labourer. Eight years ago was struck on R. E. with a stone, which produced extensive iridodialysis, peripheral detachment of iris being on nasal side. Has never been able to see much since, but eye has never given any trouble till four weeks ago. It then became irritable and painful. On admission, marked ciliary injection, pupil widely dilated and immovable, tension very much increased, and some vague signs of sympathetic trouble.

By ophthalmoscope, R. E. vitreous hazy, nerve indistinct, enlarged retinal vessels—irido-choroiditis. V = movements of hand.

L. E. Retinal hyperæmia, $V = \frac{2}{3}$.

Here was a case of severe injury in which eye had remained perfectly quiet for eight years, and had then become inflamed without any apparent cause. Leeches to temple, atropia, and gr. $\frac{1}{12}$ of hydrarg. perchlorid. three times a day, and the fellow-eye carefully watched. The lens of injured eye began to show a general peripheral cloudiness, tension remained above normal, and pain soon became very severe, while vision in fellow-eye sank to $\frac{2}{40}$, and enucleation was therefore performed. The wound healed rapidly, and all sympathetic trouble disappeared on the third day after, and patient discharged at end of week.

The eyeball, after hardening, was opened in vertical meridian. No great change in contents visible to naked eye, except some small membranes in vitreous. But their sections showed diffuse choroiditis and cyclitis, with dilatation of bloodvessels, exuded blood corpuscles and proliferating cells in abundance, and the same thing was found in vitreous.

CASE IV. *Contused Wound of Eyeball.*—J. M., æt. 18. Seven months before received kick on R. E. Lids swelled and became ecchymosed, and remained closed for two weeks. When he could open his eye, found V. very much impaired. Has always been myopic. On admission, a circumscribed ciliary injection in both eyes over insertion of external rectus. In R. E. iris discoloured and pupil small and very sluggish. R. E. $V = \frac{1}{100}$, L. E. $\frac{1}{100}$, and with concave 8, $V = \frac{2}{100}$.

In R. E., detachment of retina below disk and encroaching on it in two loose sort of sacks, marked neuro-retinitis. Three days later, the two bags had coalesced, the vitreous was hazy, and inflammatory process progressing. Patient, from own admission, has never had binocular vision for near objects, but R. E. has turned outwards constantly for last two years, and vision always worse than in L. E. A curious feature is localized vascular injection in both eyes over external rectus muscle, which may be connected with the injury, or with the overbalancing tension and action of external recti muscles. Thinks vision in L. E. no worse than before the injury.

Confinement in bed in dark room, three leeches to temple every second night, and atropia every three hours. Under this treatment the general œdema of retina grew less, as did also haziness of vitreous, but detached retina remained the same. The improvement was only temporary, for œdema of retina returned, the vitreous again became hazy and finally opaque from inflammatory exudation, and tension fell decidedly below normal. Vision reduced to faint perception of light. In three weeks from time of admission even this amount of vision had vanished, and process of shrinking was well advanced. During whole period of inflamma-

tion the cornea remained transparent. Vision in L. E. was never affected.

In this case the interesting feature was the time, seven months, that elapsed between the receipt of the injury and the final severe inflammation, and yet, all this time the degenerative process had been going on, with a surprisingly small amount of evil result.

CASE V. *Contused Wound of Eyeball*.—J. H., æt. 35, cartman. Blow on L. E. with wooden mallet the day before admission. Lids swollen and ecchymosed, profuse subconjunctival hemorrhage. Iris discoloured, pupil dilated and immovable, small hemorrhage into anterior chamber. Vitreous full of blood. Tension diminished, V = perception of light.

Two days later, blood in anterior chamber absorbed. Pupil drawn downwards and inwards, and irregularly dilated. Blood in vitreous almost entirely absorbed, and all detail of fundus clearly seen. $V = \frac{2}{7}+$.

Two days later, $V = \frac{2}{5}+$. Pupil widely and equally dilated, and vitreous clear, except a delicate opalescence. No visible injury to retina or choroid, and no sign of any ruptured vessel. Vision did not improve from this point for nearly three weeks, though the media remained perfectly clear, and tension was normal. Here a diagnosis of concussion of the retina is probably correct. After the use of atropia, dark room, and a delicate current of electricity from a battery of three cells for three weeks, vision began to improve, and after two weeks more of same treatment, V rose to $\frac{2}{20}$, and patient was discharged.

CASE VI. *Contused Wound of Eyeball*.—J. G., æt. 22, printer. Was struck on R. E. by stick three days before admission, and lost the sight immediately. There was a profuse hemorrhage, and the eyelids became greatly swollen. On admission, eyelids ecchymosed, conjunctiva filled with blood, movements of eyeball limited in every direction, cornea clear, anterior chamber very deep and half filled with blood. Iris retracted upwards, inwards and outwards, pupil almost quadrangular and displaced downwards. On closer examination, almost total irido-dialysis. Lens dislocated backwards, vitreous opaque. Great pain in eye, extending to forehead and temple, and photophobia and lachrymation in fellow-eye. Enucleation advised, but declined till tenth day after accident, when symptoms of sympathetic trouble were much more marked, and the patient consented to the operation.

Here the marked limitation of excursive movements of eyeball probably due to a profuse hemorrhage into orbit. It seems strange that so great violence did not rupture the eyeball. L. E. $V = \frac{2}{20}$. Patient discharged on seventh day.

Examination of eyeball after hardening: Anterior chamber very deep, iris torn from peripheral attachment, except for small space directly upwards. Anterior chamber filled with pus, blood and inflammatory exudation; lens dislocated upwards and backwards. Ciliary body torn from attachment, except upwards. Retina totally detached. Choroid detached from sclera upwards and backwards, and space filled with inflammatory detritus. Space between retina and choroid filled with same.

CASE VII. *Contused Wound of Eyeball; Rupture of Choroid*.—R. C., æt. 43, iron-moulder. On day of admission, was struck on L. E. by a large mass of clay with great force. Was knocked down by blow, eyelids filled with extravasated blood, and could not open them for three days. Not much pain after accident. Cold applications and atropia.

On the fourth day eyeball visible for first time, cornea clear, some blood at bottom of anterior chamber, iris discoloured and fluttering, pupil widely but irregularly dilated. Lens in position, but zonula ruptured. No cataract, but vitreous perfectly opaque from hemorrhage. Tension increased. $V = 0$. No pain. Cold applications and atropia continued, but no improvement till tenth day, when blood in vitreous began to be absorbed. $V =$ perception of light. Slow, but steady improvement up to twenty-eighth day, when most of blood absorbed, with exception of floating clots of small size, tension below normal. $V =$ fingers at three feet eccentrically. To the outside of optic-nerve, and just below the macula, was a long, white, crescentic patch, with concavity downwards, its margins bordered with blood-clots. This was a rupture of choroid, about six lines long apparently, in upright image, not involving the macula, but encroaching near it below.

From this time vision slightly improved so that he could count fingers at six feet after another month had elapsed, but always with nasal half of retina, and it never improved above this. Tension always remained diminished.

Here was a case where the blow was so violent as to knock the patient down, and rupture the choroid, yet the lens was not dislocated, nor was cataract the result.

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ART. V.—*Acute Bronchocele with Cardiac Hypertrophy occurring during Pregnancy, and producing Fatal Dyspnœa.* By JOHN B. ROBERTS, M.D., Resident Surgeon, Pennsylvania Hospital.

WE are accustomed to look upon bronchocele as an affection of importance chiefly on account of the deformity of the neck, and hardly realize that in certain cases it may cause death with great rapidity by asphyxia, the result of direct pressure on the trachea, or of interference with the nervous element of respiration, by the mechanical involvement of the important nerves traversing the neck. A case in point was recently admitted into Dr. R. J. Levis's ward in the Pennsylvania Hospital.

Mary C., aged 27 years, Irish, and in about the sixth month of utero-gestation, was admitted on December 30th, 1875, on account of violent and threatening paroxysms of dyspnœa. Four months previously, when she was about two months pregnant, there had been noticed a slight prominence of her eyeballs, which was followed by a small swelling of the anterior part of her neck, to the right of the median line. About the same time her attention was attracted to palpitation of the heart when taking active exercise. As she progressed in her pregnancy the cervical tumour continued to increase in bulk, and about two weeks before admission, at the time of quickening, she was attacked with frequent paroxysms of dyspnœa that almost reached the point of asphyxia.

The examination on admission showed slight prominence of the eyes, and an enlargement of the thyroid gland, which was especially marked

on the right side, where the tumour was about the size of a large egg. The first sound of the heart seemed rather heavy, but there was no murmur. The patient's respiration was laboured, and three or four times daily the dyspnoea became so aggravated that the woman was almost asphyxiated. During these paroxysms, which lasted three or four hours, she presented a picture of the utmost distress; she screamed outright, threw her arms about, and struggled for breath, while the turgid veins of the neck, the streams of perspiration running down her cheeks, and the lividity of her countenance added to the horror of the spectacle. The paroxysms not unfrequently terminated by vomiting, and during them she sometimes became delirious.

Laryngoscopic examination, made by Dr. J. Solis Cohen, showed tumefaction of the arytenoid cartilages, and revealed that the glottis was not œdematous, but that, although vibrating spasmodically, it did not close as much as normal. There was, however, particularly on the *left* side, bulging inward of the tracheal wall.

It was decided to undertake some operation, and accordingly laryngotomy was performed, as tracheotomy was not possible on account of the enlarged thyroid extending upwards over the trachea. Although this was done, and although the operator could force his finger into the wind-pipe, thus dispelling the idea of stenosis of the tracheal tube, yet the patient's respiration was still much embarrassed. She did not have a recurrence of the violent paroxysms, but continued to breathe with difficulty, and finally died, January 1st, 1876, twenty-nine hours after the operation, or about fifty-five hours after admission into the hospital.

The *autopsy* was made about 16 hours after death. The lungs were not adherent, and presented evidences of slight congestion. The pericardium contained a large amount of effusion; the heart was greatly hypertrophied, weighing, without the contained clots, $20\frac{1}{2}$ ounces, but there was no valvular insufficiency. The liver was normal. In the situation of the spleen there was found a small, hard, granular body, rather triangular in shape, and with what appeared to be a hilum. Its weight was $54\frac{1}{2}$ grains. The supra-renal capsules were normal in size, but were somewhat hardened, and had indurated masses on the surface. The kidneys were of the natural size, and the capsule peeled off normally, but they were lobulated on the surface, and were somewhat congested.

The tumour of the neck was found to be the thyroid gland, which was hypertrophied and surrounded the trachea from its junction with the œsophagus on one side to a similar point on the other. The tumour at the sides reached as high as the top of the larynx, and with the inclosed trachea measured $8\frac{1}{2}$ inches in circumference; the enlargement on the left side was about the same as on the right, though before death the tumour was more prominent on the right side. The isthmus was hypertrophied and bulged forwards between the ribbon muscles of the neck. The tracheal wall was slightly pushed inward by the tumour on the left side. The incision made in the operation was about one inch long, and was found to extend obliquely through the left side of the thyroid down to the cricoid cartilage. Its upper part divided the two left vocal chords, and it extended beneath the enlarged thyroid isthmus. The tumour was a simple hypertrophy of the thyroid gland, and contained no cysts. The recurrent laryngeal nerves ran beneath the gland along the sides of the trachea, and the tumour had to be dissected up to expose them. The left nerve was smaller than the right. The bronchial glands also were en-

larged. The fundus of the gravid uterus was about $2\frac{1}{2}$ inches above the umbilicus. The foetus was not removed.

This case is interesting because it is unusual for bronchocele to produce fatal dyspnœa, and this occurrence in connection with *acute* bronchocele is still more uncommon; while the combination of pregnancy and acute bronchocele followed by asphyxia is one of the rarest conditions found in medical or surgical practice.

Bronchoceles attain great bulk, even, as in a case mentioned by Alibert, reaching to the thighs, but they seldom cause pressure on the structures of the neck sufficient to endanger life. This complication is perhaps more frequent than supposed, for within a year there have been in the Pennsylvania Hospital two cases somewhat similar to the present, where suffocation resulted from the presence of bronchocele. The first case was under the care of Dr. T. G. Morton, and the second under that of Dr. J. J. Kirkbride.

The former of these, Joseph S., aged 40, was a native of England, married, and by trade a cotton carder; had had a tumour in the anterior part of his neck for 18 months, which, however, had grown with great rapidity during the last three months, and had caused for four weeks previous to admission dyspnœa of a severe character. He said that his brother had some kind of a tumour in his neck, but the patient could not describe its character. On Nov. 18, 1874, when the man was admitted, the neck from the centre of one sterno-mastoid muscle to that of the other measured $6\frac{1}{2}$ inches; the vertical measurement of the tumour was 4 inches. The tumour was freely movable and showed the presence of a cyst by fluctuation. Under treatment there was improvement, and on December 7th, 1874, the tumour measured 6 inches transversely, and $3\frac{3}{4}$ inches vertically; and there was no longer any interference with respiration. The size of the tumour, however, was not constant, but, without any relation to the treatment, increased and decreased irregularly. On Feb. 18th, 1875, the tumour had increased very much, and greatly interfered with respiration and deglutition; so much so that he could not lie down, and was scarcely able to take nourishment. He died in the afternoon of this day exhausted. The post-mortem examination of the tumour showed on the left side an enlargement of the thyroid gland, extending from the œsophagus to the middle line of the trachea, and from the level of the middle of the thyroid cartilage to within half an inch of the origin of the great vessels from the aorta. The upper portion of this tumour was a cyst the transverse circumference of which measured $7\frac{1}{2}$ inches; the internal surface of this cyst was lined with hard nodules. Below the cyst, and lying in the space between the left carotid and the innominate and right carotid, and to the left of the trachea, which was pushed to the right by the tumour, was a fibrous mass $1\frac{1}{2}$ inches in diameter. The thyroid isthmus was not much hypertrophied; the right lobe was $1\frac{1}{4}$ inches in transverse diameter. The trachea was pushed to right, and about one inch below the larynx its calibre was reduced about one-half by the lateral pressure.

The second case was not a cystic bronchocele, and was much more acute in its progress.

William C., aged eighteen years, a painter, unmarried, born in Ireland,

was admitted on July 5, 1875. He stated that he had observed, about the middle of June, that he buttoned his collars with difficulty. The following day his throat had increased in size so much that he could not button his shirt (?). The swelling rapidly increased until he had difficulty in breathing, when he sought treatment in the hospital. At the time of admission, the tumour, which was evidently thyroidal, was the size of a cocoanut, and his respiration was a good deal embarrassed, though he could eat his dinner, and afterwards walked in the yard. There was no cardiac murmur detected. In the afternoon a violent paroxysm of dyspnoea occurred, which soon abated; but he grew worse, and his laboured respiration could be heard for a long distance through the house. The attacks of dyspnoea became more and more frequent, and tracheotomy was suggested, but deemed useless. The patient died cyanosed the morning after admission. The specimen shows enlargement of both lobes and of the isthmus which completely surround the trachea. The tumour is very soft and lobulated; on the sides it extends upwards to the base of the arytenoid cartilages, while the isthmus reaches to within a quarter of an inch of the notch in the thyroid cartilage. Between the isthmus and the highest point at each side there is a notch in the tumour which leaves exposed the surface of the thyroid cartilage. Both lobes are about equally enlarged. The circumference from the œsophagus on one side around to the other, including the trachea in the mass, is now (seven months after death), $6\frac{3}{4}$ inches. It is said that, when removed, the tumour weighed four pounds. The specimen has been kept in chloral. The trachea was not laid open.

The first of these cases is an example of the rapid development which may occur in old bronchoceles; while the latter shows with what extraordinary rapidity the thyroid gland may increase and cause death in a few weeks by asphyxia. The second patient noticed that his collar was too tight—a point, by the way, likely to be noticed at the very incipency of the disease—in the middle of June, and died on the 6th of July.

In looking over the literature of the subject, I have found, exclusive of these Pennsylvania Hospital cases, but five cases mentioned where death has occurred, or would have occurred except for operative interference, on account of obstruction to respiration, within a year after the beginning of the disease; and only one case where starvation resulted as a sequence of pressure upon the œsophagus.¹ Although this is a small percentage when we reflect on the prevalence of goitre in certain districts, yet it “points to the propriety of regarding any acute enlargement of this gland in young people with more anxiety than we are accustomed to do.”² As to the fact of bronchocele being acute, there are among the cases collected, including Levis’s, six which did not date beyond five months; and I have found several recorded where there was a rapid development of old tumours leading to asphyxia. Below is a schedule of the acute cases not over one year in developing.

¹ Watson, *Practice of Physic*, p. 424.

² Risdon Bennett, *Intra-thoracic Growths*, p. 169.

	Sex.	Age.	Date of growth.	Size of tumour.	Condition of heart.	Operation.	Result.	Autopsy.	Remarks.
Davies ¹	M.	16	1 yr.	.....	.....	None	Death	Thyroid, thymus, and bronchial glands enlarged	Rapid increase for four months.
Risdon Bennett ²	M.	19	3 mos.	When removed as large as two fists	Normal	Tracheotomy	Death	Trachea compressed and twisted to the left	Female catheter used, but could not pass the obstruction. Simple hypertrophy. No exophthalmos
Trousseau ³	M.	14½	3 mos.	.....	.....	Phlebotomy; ice locally; digitalis	Cured	.....	Tracheotomy was determined upon if he was not relieved by these less severe measures.
Caird ⁴	M.	16	3 wks	.....	Normal	Tracheotomy	Cured	.....	India rubber catheter introduced. Tumour disappeared in one week, there having occurred meanwhile secondary hemorrhage.
Kirkbride ⁵	M.	18	About 3 wks	6¾ inches in circumference	Normal	None	Death	Trachea compressed	Tumour weighed 4 lbs. (?)
A. Weil ⁶	F.	46	5 mos.	Man's fist	Normal	None	Death	Right recurrent nerve flattened and atrophied. Left unaltered. Vagus & sympathetic normal Trachea compressed & perforated.	Had aphonia. Paralysis of right vocal chord seen by the laryngoscope.
Levis ⁷	F.	27	4 mos.	8½ inches including the trachea	Hypertrophy	Laryngotomy	Death	Trachea slightly compressed. Recurrent laryngeal nerves were involved in the tumor.	About six months pregnant. Dyspnoea began about time of quickening.

There are reported⁸ two fatal cases where the disease was connected with pregnancy, in both of which, as in the present, the bronchocele was developed during the first gestation and was followed finally by asphyxia. M. Guillot, in speaking of his own cases, says that Paul Dubois⁹ saw a similar case, but he gives no particulars. Guillot's cases differ from Levis's case in that the fatal termination did not occur so soon. The following is a succinct account of the course of the disease in both his cases.

In the first case the patient when thirty years of age became pregnant, and during gestation, which was her first, observed an enlargement of the thyroid gland. This enlargement increased during her second pregnancy, but seems to have caused no interference with respiration until twenty-four and a half years later, when the tumour measured nearly three inches in diameter. The patient,

¹ Holmes, System of Surgery, v. 295.

² Risdon Bennett, Intra-thoracic Tumours, p. 167.

³ Clinique Médicale de l'Hôtel-Dieu, ii. 543.

⁴ Lancet, January 29, 1876.

⁵ This article.

⁶ Deutsches Archiv für Klinische Medicin. xiv. p. 90.

⁷ This article.

⁸ Archives Générales de Médecine, vol. xvi. p. 513.

⁹ This case is also mentioned by Grisolle, Pathologie Interne, ii. 213.

by that time an old woman, had paroxysms of dyspnœa, palpitation, vomiting and facial neuralgia. Laryngotomy gave immediate relief, but she died two days subsequently.

In the second case the fatal issue was not delayed so long. The woman, who was born in Paris, when twenty-five years old noticed after her first pregnancy that there was some increase in the size of her neck. There was no further increase, however, and two years subsequently she became pregnant again. After this the tumour increased in bulk until she came under M. Guillot's observation nineteen months later. At this time, nearly four years after the first indication of bronchocele, the tumour had a circumference of nearly twelve inches, and extended from the thyroid cartilage to the sternum. The patient suffered from frontal neuralgia, paroxysmal dyspnœa, palpitation and thoracic pain. She died asphyxiated without any operation having been performed. At the autopsy the thyroid body was as large as a man's brain, and compressed the pneumogastric nerves and the carotid arteries against the spinal column. The trachea was flattened throughout its entire length until the antero-posterior diameter was only about one-tenth of an inch while the lateral was nearly four-fifths of an inch. The condition seemed to be simple hypertrophy of the thyroid gland depending upon an increase of fibrous tissue.

These two cases differ from the one under consideration because the bronchocele was much slower in development. In Levis's case the growth had been noticed only four months before death, while in the first case it had existed twenty-four or twenty-six years, and in the second case about four years. Moreover, in the last two cases the patients passed safely through gestation and parturition, but in the first death took place about six months after impregnation. In Guillot's report it is not stated at what months of gestation the first symptoms of bronchocele were perceived; but in this instance the exophthalmos and indeed the tumour itself were noticed about the second month, and the dyspnœa became marked at the time of quickening.

In reviewing these three cases we must ask: Had the pregnancy of the patient any part in causing or accelerating the growth of the bronchocele, or was it merely an accidental complication? That there is some obscure sympathetic link between the uterus and the thyroid gland was recognized by early writers. Andreas Pasta thought that women were more subject to certain forms of bronchocele than men, because a debility is induced in the gland in consequence of the vomiting of pregnancy.¹ Lalouette imagined that during the throes of labour air was forced from the trachea into the cellular tissue of the gland, causing an aerial tumour.² These crude opinions show that the subject was a matter of discussion years ago. In Cooper's *Surgical Dictionary*, under Bronchocele, it is stated that "Women are far more subject to the disease than men, and the tumour is observed to be particularly apt to increase rapidly during confinement in childbed."³ Holmes Coote mentions a case where hypertrophy of the thyroid occurred and became permanent after an abrupt cessation of the menses.⁴ Another writer says, "I see almost every year, in the wards of

¹ Barton on Goitre, p. 47.

² Barton, p. 47.

³ Vol. ii. 733.

⁴ Holmes, *System of Surgery*, v. 289.

the Necker Hospital, women in whom the thyroid body is enlarged during the period of pregnancy."¹ These statements show that the association of pregnancy and thyroid enlargement occurs too frequently to be a mere coincidence.² Dr. Frank Woodbury, of Philadelphia, has lately had a case under his care where the goitre was noticed soon after a second pregnancy. It has increased gradually, but the patient "made the voluntary statement that the swelling looks much larger during pregnancy than at other times, and grows much faster while she is in this condition."

By some authors the thyroid gland is supposed to be a reservoir to prevent sudden congestion of the brain; and some have also advanced the theory that the enlarged gland during pregnancy presses on the carotids and thus prevents cerebral congestion which is rendered possible by the impeding of venous return.³

The first theory seems much more tenable than the last, for there are undoubtedly sudden and transitory enlargements of the thyroid gland occurring during violent exertion which can only be accounted for on the supposition of temporary engorgement.⁴ As to the other theory, it is probable that any tumour exerting pressure on the carotids would also compress the jugular veins, and thereby tend to increase cerebral congestion.

M. Guillois thinks the fibrous bronchocele, found in his case where an autopsy was made, was produced in a manner analogous to the enlargement of the uterine wall and the mammary gland that takes place during gestation owing to an increase of fibrous tissue; and that it was "one of the consequences and one of the evidences of the activity of fibrous elements impressed on the system" at that time.⁵ This view of the matter, although hardly explaining it, still seems to be a very reasonable hypothesis to advance as a partial solution of the intimate connection certainly existing between the condition of pregnancy and bronchocele.

M. Poincaré, having observed the great richness of the thyroid gland in nervous filaments, thinks that this great nerve supply accounts in some measure for the close relationship between the organs of generation and the thyroid gland.⁶

What was the cause of the dyspnoea in this case of acute bronchocele? Was it caused by narrowing of the trachea? Was it cardiac dyspnoea resulting from the pathological condition of the heart in a case of Graves' disease? Was it produced by the tumour compressing the nerves supplying the respiratory muscles? or was it a reflex phenomenon dependent upon uterine irritation?

Tracheo-stenosis might undoubtedly be the cause of the difficult respira-

¹ Archives Générales de Médecine, Nov. 1860, p. 514.

² Holmes, System of Surgery, v. 295.

³ N. Y. Medical Journal, 1875, pp. 450, 451.

⁴ Id. 453.

⁵ Archives Générales de Médecine, Nov. 1860.

⁶ Lancet, April 22d, 1876, quoted from Robin's Journal de l'Anatomie, 1875.

tion, but this is more apt to be the case when the isthmus of the thyroid gland especially is hypertrophied, or when the bronchocele is post-sternal and consequently cannot project forwards as it increases. In this case, however, Dr. Levis after the laryngotomy inserted his finger into the trachea and could find no narrowing of the tube; and the autopsy showed that there was only very slight pushing in of the wall on the left side. Hence the urgent dyspnœa could not depend wholly on tracheo-stenosis, though we must admit that the asthmatic paroxysms did not recur after laryngotomy was performed; but neither did the patient react from her condition of partial asphyxia as she ought certainly to have done after the insertion of the tube, had the dyspnœa been caused by tracheo-stenosis above the point of operation, or by laryngeal trouble. The fact that the dyspnœa was paroxysmal would, I think, dissipate the idea that it was caused by tumefaction of the mucous membrane from intercurrent tracheitis or laryngitis.

The coexistence of palpitation, cardiac hypertrophy, and exophthalmos with the goitre, certainly places the case under the head of Graves' disease (exophthalmic goitre), but as the exophthalmos was slight, and the palpitation a symptom only mentioned by the patient after questioning, it seems to me improbable that the violent suffocative attacks were cardiac in their causation. And, moreover, paroxysms of urgent dyspnœa are not mentioned by the authorities as being apt to accompany uncomplicated hypertrophy of the heart or to attend exophthalmic goitre except after the bronchocele has become large. It therefore seems that the dyspnœa must be attributed to pressure upon the nerves of the neck or to reflex uterine irritation.

As stated in the post-mortem record the recurrent laryngeal nerves on both sides were found lying between the trachea and the tumour, and were undoubtedly pressed upon by the enlarged gland; this was doubtless the cause of the harsh tone of the patient's voice.¹ The sympathetic, pneumogastric, and phrenic nerves were subjected of course to the general pressure caused by the tenseness of the cervical tissues, which could not but be great, as the tumour was so rapid in its growth, and was restricted by the dense overlying fascia.

A writer,² speaking of goitre asthma, says:—

“On this point Stoerck's ideas are interesting. He says it does not come from pressure on the trachea, but on the pneumogastric or recurrent nerves, giving *sub*-paresis of the lateral crico-arytenoid muscles. Phonation is sometimes laboured, and sometimes there is noisy inspiration. There is nothing to see with the laryngoscope. The dyspnœa is paradoxical, for the glottis is abnormally *open*.”

This corresponds exactly with Dr. Levis's case, for the examination with the laryngeal mirror showed the rima glottidis abnormally patent, and the

¹ See Case 6 in preceding table.

² N. Y. Medical Journal, 1875, p. 457.

dissection post-mortem proved that there was pressure on both recurrent laryngeal nerves. The same writer goes on to say:—

“It (goitre asthma) may come from nervous influence, or from mucus getting past the glottis, but more probably from the glottis not closing, and thus allowing the bronchial muscles to force the air on into the lungs beyond, since it is relieved by stimulating the muscles to close the glottis.”

In the present case it was thought that the diaphragm did not act freely, which would add to the theory of pressure on the phrenic nerve; but in a pregnant woman it would be difficult to determine that there was diaphragmatic paralysis; and, moreover, the phrenic nerve lies nearly three-quarters of an inch from the edge of the normal thyroid gland, and it would require great hypertrophy of the latter to bring direct pressure upon it.

Regarding the cause of the dyspnœa, another opinion might be entertained, viz., that it was not connected with the bronchocele at all, but was dependent on uterine irritation, for during gestation the respiration is at times embarrassed, and severe dyspnœa occurs.¹ Still another instance of reflex symptoms of this character is seen in the asthma occurring in connection with uterine tumours.² This view, however, is hardly tenable in the face of the number of cases of goitre given where fatal dyspnœa occurred in women who were not pregnant, and in men.

It must be acknowledged, then, that although the uterine condition was an important agent in regard to the development of the tumour, and perhaps aided in the production of the respiratory distress, yet the great factor in all probability was nerve compression, resulting from the rapid growth of the goitre under the cervical fascia.

The most important question in regard to the whole subject, however, is yet to be discussed, and that is: The line of treatment to be pursued in cases of acute bronchocele producing great dyspnœa.

It has been mentioned that tracheo-stenosis is most apt to be produced when the thyroid tumour is situated behind the sternum, and cannot bulge forwards. The same effect is produced in a less degree by the tense cervical fascia, for if the tumour develops with great rapidity the cervical fascia does not distend before it, and as a consequence pressure must be exerted on the parts which are in the vicinity, and either tracheo-stenosis or nerve pressure is induced. Hence in certain cases the dyspnœa is relieved by making a free incision through the cervical fascia, and permitting the tumour to protrude; and if the urgent symptoms are caused by sudden congestive increase of the glandular tumour, the patient may thus be rescued from impending death. This operation was successfully adopted by Dr. Levis in a case under his care in the Philadelphia Hospital many years ago, in which the almost asphyxiated patient was

¹ Tyler Smith, *Manual of Obstetrics*, p. 121.

² *The Practitioner*, December, 1875.

relieved by an incision extending from the larynx to the sternum. There are a number of other cases recorded¹ where recovery followed this operation. Mr. Cusack split the fascia of the neck, but it was done so late that respiration had already ceased; he immediately opened the larynx and introduced a flexible catheter, through which he blew, re-established respiration, and saved his patient. He thought afterwards that, if the fascia had been split sooner, there might not have been any need for laryngotomy.²

If the dyspnœa be dependent upon partial occlusion of the trachea, tracheotomy may be of service, especially if a long tube or a flexible catheter be introduced in order to pass below the point of constriction.³ The hypertrophied and vascular thyroid gland generally requires the incision to be made high up in the trachea or in the larynx, and therefore a long tube is required. If nerve pressure be the cause of the symptoms, tracheotomy or laryngotomy can be of no service, as was exemplified in Dr. Levis's case, where there was, to be sure, a slight amelioration of the dyspnœa, due probably to the incision made through the fascia in reaching the trachea, but no marked relief. Tracheotomy was indicated by the bulging inward of the trachea, as seen by the laryngeal mirror, and the extreme urgency of the symptoms, but was, of course useless.

Ligation of the thyroid arteries has been done in suffocative bronchocele, but its value varies with the portion of the gland involved, and it is only available in certain cases.⁴ It would not be available in sudden emergencies.

The most radical procedure is certainly the complete removal of the enlarged gland, but this is attended with great danger on account of the important vascular and nervous structures of the neck which are in proximity to the thyroid gland. Nevertheless there have been a number of successful cases reported, especially since Greene's brilliant results.⁵

Another procedure recommended is the excision of the isthmus, thus preventing the constriction of the trachea which occurs as a result of the encircling of that tube by the enlarging gland.⁶

If the dyspnœa in the case before us was caused, as it seems to have been, by pressure on the recurrent laryngeal nerves, none of these operations would have been of much avail, for the nerve was compressed by the posterior portion of the lateral lobes of the gland. It is possible,

¹ Med. Times and Gazette, May 27, 1871. Idem., Aug. 3, 1872.

² Lancet, Jan. 1862.

³ Lancet, Aug. 3, 1861 (2 cases).

⁴ N. Y. Medical Journal, 1875, p. 465.

⁵ N. Y. Med. Record, 1866-67, p. 443. Amer. Journal Med. Sci., 1871, p. 80. Idem., 1873, p. 280. London Medical Record, April 9, 1873. Phila. Med. Times, April 15, 1871, etc. etc.

⁶ Lancet, Jan. 23, 1875. N. Y. Med. Record, Jan. 1, 1876. Braithwaite's Retrospect, lxxi. p. 175.

perhaps, that removing the anterior portion of the tumour might have relieved the general tension sufficiently to have allowed respiration, and thus have preserved the patient's life.

Any other strictly surgical treatment then would have been, as was tracheotomy, of little avail in this case unless it had been instituted at the very beginning of the disease, or unless the whole tumour had been dissected out regardless of hemorrhage and the dangers of wounding important nerves. At the stage in which the patient was admitted, it is evident, from post-mortem examination, that no remedial surgical procedure would have been feasible.

Would any form of medical treatment have been of use? Dr. Levis ordered that the patient should be bled very freely if she became so cyanosed as to point to immediate asphyxia; and, in order to make a very rapid flow of blood, the temporal arteries were to be cut rather than the veins of the arm. This was ordered in order to lessen the internal congestion, relieve the engorged lungs, and so secondarily to diminish the dyspnoea. Arteriotomy was not done, however, and when the consultation was called it was decided to open the trachea. Phlebotomy in a good many cases of bronchoceleic asthma has been followed by relief of the symptoms; and a case of Graves' disease is related by Trousseau where a perfect cure followed venesection.¹ In addition, however, ice was applied to the neck, and digitalis administered internally. Before this triple treatment was begun, tracheotomy was indicated by the extreme oppression and the imminent asphyxia, and it had been decided in consultation to open the trachea if a rapid subsidence of symptoms did not occur. In three days from the time the treatment was instituted, the boy could go up and down stairs without oppression, and finally the cardiac palpitation entirely, and the exophthalmos and the goitre almost entirely, disappeared. It would seem in Trousseau's case that the venesection relieved the distended thyroid gland, and that the subsequent continuous employment of tincture of digitalis quieted the heart's action and prevented a second congestive enlargement of the gland. It is doubtful, however, whether the same result would have occurred in the case under discussion, in which the hypertrophy was fibrous in character.

The last question to be considered is whether the production of abortion would have been of service in averting the fatal termination of this case. At the time the patient was admitted the tumour had acquired the bulk which was sufficient to cause fatal dyspnoea; and therefore it would have been useless to have emptied the uterus. That operation would have been attended with an increase of nervous excitement, and the accompanying tenesmic efforts would have added to the difficult respiration.

In the second case mentioned by Guillot the bronchocele ceased en-

¹ Clinique Médicale de l'Hôtel-Dieu, ii. 544. See Case 3 in table.

larging after parturition, and did not again become active for a year and a half, when the patient became pregnant a second time. This would point to the propriety of producing abortion in the early stage of gestation as soon as the bronchocelic swelling became marked; but in both of his cases the enlargement continued to increase, even after the delivery of the second child. In regard to this procedure then it may be said, that, owing to the unmistakable causation of gestation in producing bronchocelce, it would be the safest plan to induce premature labour in all cases where there is presented a marked swelling of the neck: although the goitre may not be dangerous in the first pregnancy, yet there is established a source of danger which is liable to become imminent in succeeding pregnancies.

From the few cases recorded it is impossible to deduce accurate conclusions, but it is readily seen that strict surveillance of all such cases is of paramount importance.

From the similar functions of the thyroid gland and spleen as blood glands, so called, there may be some supplementary relation in regard to the size of these organs; and it may be asked whether the small body found in the position of the spleen was really a spleen of miniature proportions; and if so, whether it was so small because the thyroid body had so much increased in size. This question, however, cannot now be discussed.

ART. VI.—*Femoral Aneurism treated by Plugging the Sac; Death, caused by Hemorrhage from Deep Epigastric Artery, on the Eighteenth Day; Autopsy; Remarks.* By B. A. WATSON, M.D., Surgeon to Jersey City Charity, and St. Francis Hospitals, Jersey City, N. J.¹ (With two wood-cuts.)

HERMAN R., native U. S., æt. 32, married; peddler; a well-nourished, medium-sized man, presented himself at the Dispensary connected with the Jersey City Charity Hospital in February, 1876, for examination, complaining of sharp and lancinating pains in the gluteal and sacral regions, and occasionally in the right knee. These pains were severer in stormy than in fair weather. Mentioned incidentally "a swelling in the right groin."

Examination revealed a pulsating tumour, about the size of a man's fist, situated over the course of the right femoral artery—upper margin about one inch below Poupart's ligament. The tumour could be reduced by manipulation while the artery was compressed as it passed over the brim of the pubes. Pulsations were eccentric, and almost synchronous with heart impulse. Auscultation revealed aneurismal *bruit*.

¹ I desire to acknowledge my obligations to Drs. Lathrop and Cropper for the notes used in the preparation of this report.

Patient stated that about fourteen years previously he had been kicked by a man in that spot, and soon afterwards a hard lump appeared, which was sensitive to touch, but this swelling gradually disappeared. Two years after this he noticed a "beating swelling," the size of an English walnut, which remained stationary until two years ago, when it began to increase in size. He was advised to enter the hospital, but refusing, nothing more was seen of him until the 9th of May, when he applied for admittance.

At this examination the aneurism was found to have increased greatly—being fully as large as a cocoa-nut and extending up into the right inguinal region about three inches. The walls appeared thick and boggy to the touch; pulsations evident, but not so forcible, and *bruit* less distinct. Pulsation of right popliteal artery weaker and less prompt than that of left; right leg somewhat œdematous—especially at ankle.

Stated that in the interval he had struck the tumour several times in mounting his wagon, and it had caused him considerable pain. Had been treated in a New York hospital "by means of bandages compressing the whole leg." He left the hospital on the following day without waiting for operative relief which had been suggested.

Readmitted May 26. During the interval, the tumour had increased enormously, and extended from two inches below Poupart's ligament to within one inch and a half of umbilicus, with the following measurements—long diameter, situated parallel to external iliac, nine inches; transverse, six inches; external circumference, twenty-one inches, with an elevation of two and one-half inches. Apex exhibits a dark-black spot about as large as a five-cent piece, denoting a gangrenous condition, surrounded by an areola of inflamed integument two inches in breadth, interspersed with smaller spots in a semi-gangrenous condition. Patient stated that this had appeared two days previously, and he had applied onion poultices.

On careful examination no pulsation or *bruit* could be detected in the tumour; nor any pulsation in the arteries of the affected limb. The walls of the tumour appeared thick and sodden. Temperature of both legs being taken in popliteal space, the right one showed 98.4° F., and the left 98.8° F.—only $\frac{4}{10}$ ° difference.

Patient in a very feeble condition—was ordered stimulants and a liberal diet, and as he was restless at night morphia was required to produce sleep. Complaining of a great deal of pain in the tumour, warm fomentations were applied over the affected part.

Early on the morning of May 28th, the apex of the tumour presented a slight fissure, through which a segment of a small dark clot protruded. During the day this extrusion gradually increased and the fissure extended—until suddenly at 5 P. M. a rent, about two inches in length, opened; a handful of dark clots mingled with a small quantity of arterial blood was forced out. Dr. C. C. Lathrop, House Physician and Surgeon, with his Assistant Dr. C. W. Cropper, fortunately arriving at this juncture, the latter firmly compressed the abdominal aorta, and the former thrust a plug of lint into the opening. By these measures all hemorrhage was controlled until my arrival, when it was determined to pack the sac. The temporary plug having been removed, and the sac quickly emptied of the loose coagula, I introduced a tent of lint saturated with liq. ferri subsulph. into the opening of the external iliac artery, and then firmly packed the whole sac. There were used during the operation nearly one quart of the solution and more than three yards of lint. The pressure on the abdominal aorta was now cautiously removed, the packing was retained in place two hours by

digital pressure, and, as no further hemorrhage had occurred, a compress was placed over the distended sac, and this retained *in situ* by means of a roller bandage.

Although little blood was lost, the patient experienced considerable shock, from which he rallied in about five hours sufficiently to partake of nourishment.

May 29. Slept well during the night; is entirely free from pain, but complains of a complete loss of sensation in the right leg.

30th, 9 A. M. Temperature 101.5°; pulse 140. Passed a comfortable night. Sensation in leg is gradually returning. 11 A. M. Complains of some nausea. 6 P. M. Temperature 103°; pulse 160. Nausea increased till 5.30, when patient began to vomit—has ejected everything taken during the day. Feels weak and despondent. A dilute solution of carbolic acid is administered.

31st, 9 A. M. Temperature 102°; pulse 130. Vomiting entirely ceased and stomach tolerant of food. Sensation in right leg has wholly returned. General condition greatly improved, and patient more sanguine.

(My attendance on patient ceased this day; however, through the kindness of Dr. D. L. Reeve, who succeeded me as Visiting Surgeon, I was enabled to observe the further progress of the case.)

June 1, 9 A. M. Temperature 102°; pulse 120. Patient eats well and relishes his food. Complains of very little pain and fatigue, which he ascribes to the weight of the packed sac.

2d, 9 A. M. Temperature 102.5°; pulse 130. Passed a restless night, although he had taken his usual dose of morphia. Tongue furred and dry; appetite wanting; has some pain in right knee and also about sacrum. Is ordered five grains quinia three times a day.

3d, 9 A. M. Temperature 101.6°; pulse 120. Passed a quiet night; feels well; appetite has returned. Suppuration well established. Plug becoming more exposed to view on account of the disintegration of edges of the sac. The odour emanating from the tumour having become fetid, carbolic acid solution is directed to be sprayed over the sac.

4th, 9 A. M. Temperature 101°; pulse 118. Has been again suffering with nausea, the result of indiscretion in eating. A weak solution of carbolic acid has been taken with apparently good results.

5th, 9 A. M. Condition much improved. Sac suppurating freely but not profusely.

6th, 9 A. M. Temperature 100.5°; pulse 112. Appetite and general condition good.

7th, 9 A. M. Temperature 100°; pulse 104. There has been marked improvement in condition of patient during the past few days. Plug slightly movable, resting loosely in the sac, which is thoroughly syringed out with a weak solution of carbolic acid.

8th, 9 A. M. Temperature 99.5°; pulse 102. Complains of a peculiar feeling of numbness in the affected leg; sensation slightly blunted. Otherwise, improvement continues.

9th, 9 A. M. Temperature 100°; pulse 106. Plug very movable. Suppuration healthy, and granulations, which are gradually extruding the plug from the aneurismal cavity, can be observed springing up from its sides and bottom.

10th, 9 A. M. Pulse 120 and weaker. Strong pulsation observed in abdominal aorta just below umbilicus. Appetite slightly diminished. Tablespoonful brandy directed to be given every two hours.

Photograph taken at 3 P. M., from which the following wood-cut was prepared.

Fig. 1.



A. Plug. B. Dark line showing contour of the aneurismal tumour at the time of rupture.

11th, 9 A. M. Pulse 114. Condition less favourable. Pulsation in abdominal aorta more tumultuous and forcible. Examined carefully, but no *bruit* discovered.

12th, 9 A. M. Condition same as yesterday. 4 P. M. Considerable hemorrhage occurred. Compression made over abdominal aorta gave patient intolerable pain. This not proving sufficient, the loose plug was removed quickly and the sac hastily repacked with dry lint. Apparently the source of supply for this hemorrhage rested at the bottom and lower part of the sac. It did *not* jet out, but appeared to "well up" as if from a vein. Patient greatly weakened and depressed.

13th, 9 A. M. Very weak. Pulse frequent and feeble. Complaints of great pains in umbilical and sacral regions. Had a slight hemorrhage at 1 P. M. Twenty drops of laudanum were given with each dose of brandy.

14th. Condition very low; almost pulseless; eats nothing; stimulants increased. Slight hemorrhages occurred at 11 P. M., 3 A. M., and 12 M., which were controlled by pressure on aorta.

15th. Patient had a severe hemorrhage at 1 A. M., which was controlled with difficulty by the usual means. Died at 8 A. M.

Autopsy, made eight hours after death, revealed a large aneurismal sac, which extended upwards and covered, but did not involve, the right external and common iliac arteries.

Further examination showed that the aneurism belonged to that class commonly described as sacculated, and was slightly conical and irregularly flattened. The long diameter of sac measured ten inches; the breadth, seven inches; and depth, two and a half inches. The interior of cavity

presented a continuous granulating surface. The walls were thickened and fused with the surrounding structures by means of inflammatory action. A powerful stream of water from the hydrant, being directed into abdominal aorta above smaller aneurism, had the effect of dilating this vessel to a marked degree—the left common iliac being compressed—no water entered the large sac. A similar trial in the case of femoral artery produced the same result.

A fusiform aneurism of the abdominal aorta, commencing about two inches above its bifurcation and involving the left common iliac as far as its division, was also found.

A considerable amount of laminated fibrin was deposited on the walls of this aneurism.

Fig. 2.



A. Femoral aneurism. B. Abdominal aortic aneurism. C. Plug. 1. Abdominal aorta. 2. Right common iliac. 3. Left common iliac. 4. Right external iliac. 5. Right internal iliac. 6. Left external iliac. 7. Left internal iliac. 8. Femoral. 9. Profunda femoris. 10. Deep epigastric (straw inserted into opening). 11. Internal circumflex. 12. External circumflex.

a. Cardiac extremity of first plug. b. Distal extremity. c. Top of plug. d. Bottom of plug.

The right external iliac artery was noticeably smaller than the left. The arteries being opened, the right external iliac was found to be completely occluded by a firm thrombus which extended from the aneurism to the origin of the artery—while the femoral was filled completely with a similar clot as far as the origin of the profunda femoris.

The deep epigastric was enlarged, and opened into sac on its external and lower surface.

The circumflex iliac was enlarged, and took its origin in upper part of aneurism. The superficial epigastric, superficial external pudic, superficial circumflex iliac, external circumflex, internal circumflex, and perforating arteries were all greatly enlarged. The arteries not having been injected, the anastomoses, unfortunately, could not be definitely determined.

The post-mortem appearances will be better understood with the aid of the wood-cut, Fig. 2.

This pathological specimen, very soon after its removal from the cadaver, was placed in a strong solution of alcohol, where it remained several days before the photograph was taken from which the wood-cut (Fig. 2) was prepared.

The first effect of this treatment was to diminish, in a very marked degree, the dimensions of the aneurismal sacs, and, secondly, a change in the relations of the parts; and this is further increased by turning the large aneurismal sac away from the arteries on which the long diameter naturally rested.

These changes, however, are unimportant, since a reference to Fig. 1 shows the outline of the original tumour at the time the sac ruptured, and the report furnishes the necessary data in regard to the measurements of both aneurisms. The aneurismal sac, "A," has been filled loosely with cotton for purpose of supporting the lateral walls. The plug, "C," presented a very curious appearance. There was not a trace of lint to be seen at any point on the surface.

The exterior part was apparently composed of a mixture of iron and animal matter at least one-fourth of an inch in thickness.

This coating was perfectly smooth, and remained so until it had been exposed to the atmosphere several days, when it assumed the appearance shown in Fig. 2.

At the time of its removal from the sac it was found to be very firm, and to possess a remarkable power of cohesion, which was seemingly due to the coating. This cohesive power was retained for some weeks after its removal from the sac, until probably the animal matter had undergone decomposition, rendering the coating friable, when the fragments of lint could be easily separated.

The aortic aneurism, as shown in Fig. 2, is a subject of interest in connection with the study of post-mortem appearances.

The question of origin and the conditions favouring its development are of primary importance.

Did this morbid condition exist at the time the femoral aneurism ruptured? I think not. At that time no symptom had ever been mentioned by the patient indicating any disease of the aorta.

The first indication of this lesion was observed on June 10th, thirteenth day after the rupture of the large sac, and five days previous to the patient's death. I am of the opinion, however, that this aneurism originated within forty-eight hours after the plugging of the large sac. The thoroughly debilitated condition of the patient was such as to predispose to this result; the pressure maintained on this vessel previous to and during the operation, with the mechanical action of the blood, were the principal causes of its production. The pressure was made with a roller bandage

in the hands of Dr. C. W. Cropper, who by steady and equable force controlled completely all hemorrhage. The injury to the artery, if any, certainly could not have been less, and the object sought accomplished by any other method.

The question may, perhaps, be asked—why some more modern means, as ligation, or galvano-puncture, were not resorted to in this case? Before answering this question, I would call attention to Fig. 1, and also ask reference to the description of the aneurism at the time the patient presented himself for treatment in the hospital. The description, aided by the illustration, surely cannot fail to satisfy the most skeptical that an attempt to tie either the external or common iliacs, without first opening the sac, would have resulted in a failure. It is true the aorta could have been taken up, but the record of this operation is not very encouraging, since no patient has been known to survive the operation for more than ten days.

The attempt at ligation, after opening the sac, appeared not less formidable than ligating the aorta, since it was impossible, prior to the autopsy, to know that the arteries covered by the tumour were not involved in it.

It will also be remembered that at this time there was neither pulsation nor other evidence of the existence of fluid blood in the aneurism. A few days later, the sac is found completely filled with dark clots, and I am now fully satisfied that in this respect there had been very little, if any, change since the admission of the patient into the hospital.

Again the semi-gangrenous condition of the covering, and the coagulated contents of the aneurism forbade the galvano-puncture, or the use of compression in any form. Although this condition of the contents aroused the vain hope that there was a possibility of a spontaneous cure, yet, we fully realized the insecure character of the basis of our hope, since we were in total ignorance as to the origin or duration of this solidification.

Thus, it will be seen that the operation of plugging was not performed from choice, but as a *dernier ressort*. As this operation is not even mentioned in many of the modern works on surgery, I have thought it desirable to give so much of the literature as I find readily accessible.

M. Lisfranc, writing in 1835, says:—

“The means applied in this method are as follows: the controlling of the blood by compression above the aneurism; the opening of the tumour; the removal of the clots; the insertion into the opening of the artery of *carton maché*, agaric, or dossils of lint powdered with astringents; the employment of compresses saturated with aromatic spirituous liquids; the application of a roller bandage, and the continued use of the tourniquet. Although Guattani is reported to have thus cured an aneurism of the external iliac (artery), although the use of the tampon has saved the life of a *sick woman*, in whom a surgeon had opened an inguinal aneurism, this means should almost always be rejected; it can be *useful* only when there is *no other* to replace it. It

must, in fact, be *almost always* followed by consecutive hemorrhages, inflammation, very abundant suppuration, and gangrene."¹

Prof. William Pirrie, writing on the surgical treatment of aneurisms in 1860, says:—

"Another operation, practised by Guattani and others, consisted in laying open the sac, removing its contents, and applying graduated compresses to the extremity of the artery at the mouth of the sac. In performing this operation, some surgeons, among whom was Guattani, endeavoured to arrest the hemorrhage by pressure alone, using compresses for this purpose; others, retaining the use of compresses, also applied styptics."²

Mr. John Erichsen, discussing the means used in controlling hemorrhages from aneurismal cavities, says:—

"If hemorrhage have already supervened, the case is attended with immediate danger. In such a case as this, the first indication is clearly to arrest the immediate flow of blood, so as to prevent the patient dying at once. This can be best accomplished by turning out the coagula and plugging the sac with lint or compressed sponge, retained *in situ* by a firm, graduated compress, and well-applied roller. The hemorrhage having thus been arrested for a time, the surgeon should take into consideration what steps should be adopted permanently to restrain it. In some cases, indeed, though these are exceptional, the plug and compress may be sufficient to prevent a recurrence of the bleeding; but in general it will not do to trust to these means unless the anatomical relations of the part be such as to preclude the possibility of adopting any more active measures."³

Prof. Velpeau, referring to the means used to control hemorrhage of arteries accidentally opened, says:—

"It often happens, that surgeons find themselves so situated as to render it impossible for them to tie an artery which they have opened either by mistake or design; in such cases it is their usage, in order to save their patient from death, to plug up (*tamponner*) the wound, and compress the vessel by applying to it, directly, the different substances eulogized by Trew, Teichmeyer, etc. This method, besides being much less frequently employed than indirect compression, possesses in fact much fewer advantages, and ought, at the present day, to be wholly rejected: some success has nevertheless been imputed to it."⁴

The objections urged by Lisfranc, in 1835, the date of the publication of his monograph "On the different methods of procedure for the obliteration of arteries, their respective advantages and inconveniences," were entitled to more weight then than at the present time.

Prof. Jos. Lister's antiseptic system of treatment might be reasonably supposed to modify his views in regard to inflammatory action.

It is evident, from the manner in which Lisfranc speaks, that he had never attempted to perform the operation, and neither is there any proof that he ever saw a case in which it had been resorted to. He says: "It must, in fact, be almost always followed by consecutive hemorrhages, in-

¹ Des diverses méthodes et des différens procédés pour l'oblitération des artères, de leurs avantages et de leurs inconvéniens respectifs. Bruxelles, H. Dumont. Londres, Dulan et Compagnie. 1835, p. 33.

² Principles and Practice of Surgery, p. 519, Second edit., London, 1860.

³ The Science and Art of Surgery, p. 505, Amer. edit., Phila., 1859.

⁴ Operative Surgery, Edited by Mott, vol. ii. p. 59, N. Y., 1851.

flammation, very abundant suppuration, and gangrene." Whether these serious results will follow in the plugging of aneurismal sacs will depend on the following conditions, viz.: the general condition of the patient; the local condition of the diseased parts; the thorough or careless manner in which the sac is plugged, and the after-treatment of the case.

Let us now turn our attention to the subject of inflammation, and suppuration, and the dangers to be anticipated from this source. Are the tissues of the sac of such a character that they will be readily destroyed by suppuration?

It will be remembered, the interior of the sac of a *true* aneurism is composed of the walls of the artery; and the exterior, of such tissues as may have become agglutinated, to the interior, by inflammatory action; while the interior walls of a *false* aneurism—although not formed from the artery—are almost identical in structure. My observations lead me to suppose the interior walls of aneurismal sacs will act in nearly the same manner as the arterial tunics. Prof. S. D. Gross, referring to the diseases of arteries, says: "The arteries are almost insusceptible of *gangrene*. Their conservative powers are certainly very great, as is evinced by the fact that they often escape destruction in the midst of parts that are perfectly deprived of vitality. In such cases, their outer surface is incrustated, at an early period of the disease, with a thin layer of fibrin; and, long before the sloughs begin to separate, the blood coagulates in their interior, thus opposing an effectual barrier to the occurrence of hemorrhage."¹

Prof. John Erichsen says: "The *ulceration* of arteries, though frequently spoken of, in reality seldom occurs."²

It is a fact well authenticated that arteries in the lungs are frequently found traversing cavities separated from the surrounding tissues, and resisting the disintegrating action for a long period. These arteries are found obliterated and diminished in size and capacity. I have seen the femoral artery in Scarpa's space separated from all the tissues; the sheath even having opened, and three inches of the artery freed from all its natural surroundings; and this part remained in the same condition for several days, and then the granulations sprung up from the bottom of the ulcer, crossing the vessel without having interfered in the least with its functions. "Dr. John Thomson declares that he has seen cases of phlegmonous erysipelas, in which 'several inches of the femoral artery were laid completely bare by the gangrene, ulcerations, and sphacelus of the parts covering it without its giving way before death.'"³

In the case of the patient recently treated, the suppuration was less than

¹ System of Surgery, vol. i. p. 662, 4th ed., Philadelphia, 1866.

² Ibid., p. 480.

³ Watson's Practice of Physic, edited by Condie, p. 144, new Am. ed., Philadelphia, 1858.

I have ever seen it where the same preparation of iron had been used over an equally large surface.

It is true the integument which was in a semi-gangrenous condition when the sac ruptured, became gangrenous and separated from the living tissues by the ulcerative process, but the interior preserved its vitality.

Again, it will be observed that the directions given by Lisfranc refer simply to plugging the sac, but nothing is said by him about plugging the artery. The former operation is open to objections, from which, however, the latter would be free.

I will, therefore, venture to propose the latter as a substitute for the former.

This I conceive to be the most important step in the whole work, and should be performed with great care and accuracy.

Before the aneurism is opened, tents of proper size and suitable material should be prepared with a strong ligature attached to the base for the purpose of facilitating their removal. These ligatures should be brought outside of the sac after the tent has been firmly introduced into the opening of the vessels. A very desirable tent could be made with the rubber now used in making rubber stoppers.

I have, in cases of emergency, made very satisfactory tents of charpie, by placing a flexible wire in the centre, where flexibility was desired, and in other cases where it was not required I have substituted wood. The charpie is placed about the wire or wood, then firmly wound around with a silk ligature, considerable care being required to bring it to the proper size and form.

Having thoroughly plugged both the cardiac and distal openings in the sac, the sac itself may be packed with lint or other material, in case there is still some hemorrhage, but in the large majority of instances, I think it will be unnecessary. The hemorrhage will be as securely controlled by the use of these tents, providing they are properly prepared and securely introduced, as could possibly be done with a ligature.

The advantage of plugging the artery instead of the sac is this: the local circulation is not interfered with in the same degree, and the nutrition of the parts is proportionally better. It will be seen at a glance, that, when the sac is plugged with sufficient firmness to control the hemorrhage in a large vessel, it must necessarily put the sac and surrounding integument on the stretch and keep it in this condition; thus favouring death of their parts, while the other plan of treatment cannot be open to this objection. I now incline to the opinion that this method of procedure may be found useful not only in cases of the same character as that reported, and in cases of accidental opening of large vessels, but may be applied in the treatment of aneurisms of the extremities with or without the use of Esmarch's bandage; but I should favour a strict adherence to Prof. Lister's antiseptic mode of operation and after-treatment.

ART. VII.—*Extraordinary Case of Intra-cardiac Cyst.* By EDGAR
HOLDEN, M.D., of Newark, N. J.

IN view of the vagueness of the prevalent idea concerning heart-clot and polypus of the heart-cavities, it is not surprising that the fibrination due to the churning of the blood in articulo-mortis, or the coagula post-mortem, should be mistaken for veritable polypi.

The following case, copied from notes taken at the time of attendance, and verified by autopsy, will perhaps prove of interest, especially as the remarks of Rokitsansky, vol. iv. p. 167, quoted below, seem almost as though written for this particular instance :—

A. B., æt. 35, a stout, robust, and healthy man, but somewhat given to excesses, while making his toilet on Monday morning, April 10, 1876, fell to the floor in a state of unconsciousness, with an involuntary evacuation of the bowels. Called immediately, I found the patient fully conscious, but fainting upon the least motion of head or even hands. No pulse at the wrist, and the heart beat so rapid as to seem almost like a continuous thrill, but regular and of even force. Temperature 99°. Believing the attack to be one of acute palpitation from use of strong tobacco, from which he had once before suffered, antispasmodic and stimulant treatment was resorted to, with such apparent success, that on the next day he was able to sit up, and even to go out for a walk.

April 12. At 5 A. M. occurred a sudden relapse, faintness, no radial pulse, no carotid pulse, contracted pupil, indescribable agony, yet with no pain. Anodynes, antispasmodics, hot douches, and stimulants gave but slight relief; an emetic of mustard water gave a little ease, and placing the head lower than the body, to favour cerebral circulation, was also beneficial for a brief time. Temp. 99°.

13th. No improvement, no rest or sleep. I succeeded in counting the heart-beats, and after several attempts verified the count at 204. Respiration normal. Ice to the spine, Hoffmann's ether, strychnia, etc., producing no effect, and the rhythm of the heart being unaffected, ventured next day to give digitalis in small doses with musk, but was speedily admonished, by the increased suffering of the patient, to discontinue.

14th. No improvement, great jactitation, constant and indescribable agony, no pain, head still clear, bowels and kidneys free, no voluntary evacuation since the first day. A consultation was now held with Dr. Southard, and bromides resorted to in large doses, but with no effect. As no effect followed any medication, all allusion to subsequent treatment will be discontinued in the report. *No sleep now for six consecutive days.* Morning temperature 101°; evening 100°; heart-beat 216; respiration 14 per minute. (See record on chart, next page.)

16th. Stertor; involuntary evacuations, and for the first time a subdued friction sound over the base of the heart. Morning temperature 97°. Evening 97°. No delirium, less tendency to syncope; raised up without increased suffering; no dyspnœa.

17th. Morning temperature 96.5°. Evening, 97°. No other change.

18th. Temperature, A. M., 96°. A flutter-pulse at wrist; quiet sleep; easy respiration, but sighing; pulse (by counting over the heart) 220; face flushed; feels better.

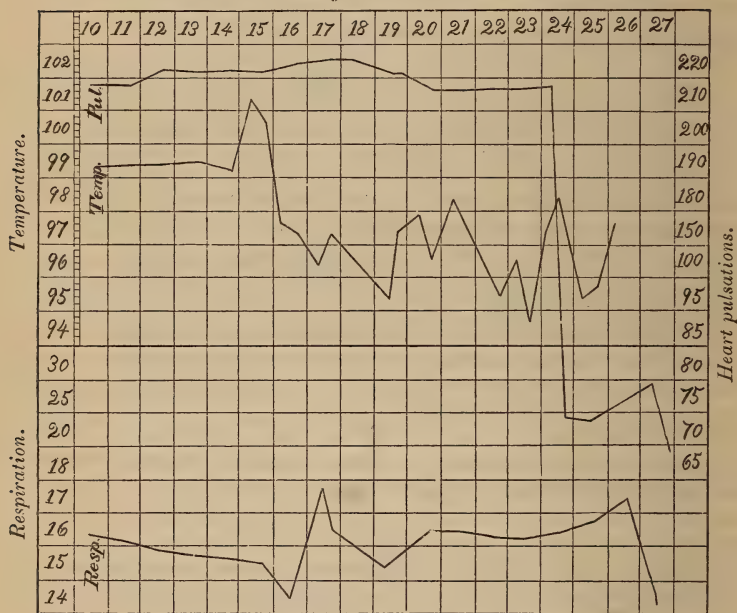
19th. Temperature, A. M., 95° ; P. M., 97.5° . Supposed effusion; the heart beats seeming slightly muffled; faintings frequent, even without exertion.

20th. Skin cold; heart-beat slower; patient drowsy; friction or churning sound at base; temperature, A. M., 97° ; P. M., 96.25° . A grain of opium every hour appeared to relieve the peculiar agony from which he has suffered, but the skin has become cold and clammy; intellect still clear.

21st. Condition unchanged, except that the surface of the body has become extremely sensitive; patient screams if touched.

A. B—s, æt. 35, male. Newark, N. J., April, 1876.

Days of month.



22d. Left side of body somewhat purple, and left foot cold, but acutely sensitive; muttering delirium.

23d. Foot completely dead, and black as high as two inches above ankle.

24th. Being the fourteenth day of the disease, the pulse suddenly at 2.45 P. M. became normal, dropping at once from above 200 to 75, at which rate it continued, or nearly so, until death, four days later.

The following brief notes complete the case:—

25th. Raved all night; throat sore; tongue dry; petechial eruption on chest and limbs; flushed face, and appearance of emaciation so astonishing in its rapidity as to excite the attention of friends and attendants; pulse and respiration normal; temperature 95° .

26th. Same condition, but raving frantically; easily rallied, however, when spoken to, and answering questions intelligently; complains of great pain in the back of the head. Paraplegia, with involuntary evacuation of bladder and bowels. Intermittent respiration; intervals of sixty to

ninety seconds between breaths; pulse singularly even, strong, and regular. Death on the 27th of the month, and 17th of illness.

Autopsy, sixteen hours after death. Present, Drs. Southard, E. A. Osborn, Bleylie, Haight, Burrage, and Holden. Body rigid, of strongly cadaverous odor, and threatening rapid decomposition. The mortified foot somewhat reddened; lungs normal; pericardium somewhat reddened about the efferent vessels; effusion within slight; heart somewhat loaded with fat; apex and base, together with two inches of the aorta externally injected; right auricle and ventricle slightly dilated; left ventricle normal, save that within it and lying entangled in the chordæ tendineæ was a cyst, the size and shape of a large filbert, entirely detached and empty. The position and character of this were verified by the gentlemen present, before removal.

Upon searching carefully, another was found, but attached to the anterior aspect of the ventricle, just beneath the mitral valves, and bound down by the columnæ carneæ. No further examination was deemed necessary. Microscopical examination, made by Dr. Geo. A. Van Wageningen, of Newark, N. J., may be best reported in his own language.

"I have examined the small cyst from left ventricle of heart. The tissue composing its walls does not resemble that of a fully organized cystic tumour. I could find no epithelial or endothelial layer lining it, and no signs of blood-vessels. It consisted of a mass of small, round, ovate, and caudate granular cells, about the size of, and much like, pus-cells in general appearance. The whole seemed to be held together by a very delicate reticulum of fibrous tissue, which cropped out along the edges of the specimen. In some places organization had gone so far that the tissue was partly striated. The whole appearance resembles that which is found in a fibrinous clot undergoing some organization. I think it comes fairly under what Laennec has described as globular vegetations. There were a few fibres floating free, which I had torn from the edges of the specimen mounted."

The remarks of Rokitsky, already alluded to, so aptly describe this case, that I trust it may be pardonable to quote them; they are as follows:—

"*Globular Vegetations*.—The formations distinguished by this designation are generally round concretions, varying from the size of a pin's head to that of a nut, attached by means of ramifying, cylindrical, or flat appendages or bands, which entwine themselves among the trabeculæ of the heart, and are of a more or less uniformly dirty, grayish-red, or white colour. They are hollow in the interior, but contain, within a wall of irregular thickness, a dirty, grayish-red, or even chocolate-coloured thickish fluid, resembling cream or pus, and which is occasionally of a dirty whitish or yeller colour. One or more of these concretions very frequently burst, when the fluid may be seen effused into the cavity of the heart, and distributed over the recent coagula which have been formed either in the death-struggle or shortly after death, or it is found mixed with the fluid blood contained in the cavity. The band-like appendages which they throw out are either solid or softened and liquefied in their interior.

"The globular vegetation is originally a solid fibrinous coagulum of irregular form, which varies in colour according to the number of blood-corpuscles it contains, from different shades of red to a reddish-white colour. This coagulum gradually assumes a roundish form, probably in consequence of the outer portion being taken up in the blood in a finely comminuted state. The metamorphosis which it undergoes is very important, and begins as a softening disintegration or solution in the interior of the nucleus, from whence it extends towards the surface. This process is so far developed in the globular vegetations above described, that there only remains a peripheral layer, which incloses the dissolved part as in a capsule. The soft and diffuent mass consists, as has

been already remarked, of a pulpy, cream-like fluid, very often resembling pus, and of a chocolate, or dirty brownish-red, reddish-gray, pale-yellow, or whitish colour. A similar metamorphosis affects the ramifying band-like coagula, proceeding from the vegetations when they become hollow. The same process is occasionally discernible in the central layers of those coagula of the first form which have arisen during life. We sometimes observe in these coagula a tendency to decomposition, both by their turbidity and opacity, their dirty-yellow colour, their extreme lacerability, and by the appearance of a turbid cream-like moisture when they are compressed and torn.

"It is a remarkable circumstance that globular vegetations are almost always limited to the left ventricle, where they are attached, in the manner already described, to the apex and the contiguous parts."

Remarks.—The summing up of this typical instance of true globular vegetation in the ventricles, gives us the following symptoms, viz.: Protracted functional derangement of the heart for a year, without murmur or impairment of rhythm or impulse, and attributed to strong tobacco; sudden syncope, and brief loss of sensation and motion; intensely rapid pulsation of the heart, with incapacity to maintain arterial and capillary circulation; cerebral anæmia and insomnia; frequent faintings, first upon slight motion, and later, without; remarkably low temperature; singularly unimpaired respiration-rate; sudden dropping of pulse-rate from above 200 to a normal state, both as to frequency, tension, and rhythm, and its continuance up to the hour of death; intense hyperæsthesia of the surface of the body; embolism of the popliteal artery, with death of the limb; clearness of intellect through all, till almost the last day; and, finally, paraplegia and death.

Whether any more reasonable explanation might be offered in this case than the following, it is impossible to say, but it seems to me that the existence of the cysts following a forgotten endocarditis, would be adequate cause for the functional prodromata; the sudden detachment of one, and the repeated plugging of the aorta at each systole of the heart, would explain the syncope and the excited and intensely rapid beating, while the entanglement of the cyst in the trabeculæ where found, might explain the sudden fall to a normal rate. The protracted disturbance of nutrient supply to the brain, and irritation of the pneumogastrics as well as the central sympathetic ganglia, would in a measure account for the vasomotor derangement, the cutaneous hyperæsthesia, and the low temperature; embolism of the popliteal, and later, of more important arteries, would be a not-unlooked-for complication.

ART. VIII.—*Thrombosis of the Right Ventricle, extending into and occluding the Pulmonary Artery, consequent upon Rheumatic Inflammation; Chorea; Convulsions; Death.* By A. B. ISHAM, M.D., Cincinnati, Ohio. (With two cardiographic tracings.)

SOME writers have endeavoured to found a distinction between ante- and post-mortem clots upon a difference in colour. But as coloration depends upon the uncertain chances of position of thrombus, imprisonment and retention of red blood corpuscles between the fibrinous layers, and of hæmatin staining, it is obvious that variations in shade from red to colourless afford no true basis for discrimination. Very little more reliance can be placed upon the consistence of the clot. In proof of this assertion it only needs reference to the experiments and observations of Zwicky, Stilling, and Durante upon the production of arterial thrombi. The results of their investigations upon the process of coagulation in the vessels of living animals also largely disarm the opponents of spontaneously formed fibrinous concretions in the heart during life, who adduce the occurrence of such clots found after death from causes with which they could have had no connection. Only, further, it would seem, to render the work complete, is it essential to show an application to the living human subject. Of this we are furnished abundant evidence, notably by Virchow, Richardson, and Fayrer, of persons seized with marked symptoms of cardiac disturbance in which the autopsy furnished these concretions within the heart without any sign of other lesion of fatal import.

The following case is offered as well illustrating the clinical history of thrombic formation within the heart and pulmonary artery, and as interesting, furthermore, from the relation it sustains to that form of choreic manifestation incident upon anæmia of the central nervous system due to obstruction of blood supply, as indicated by a study and comparison of cardiographic tracings :—

M. B., æt. 13, first seen Nov. 4th, 1875, suffering from rheumatic inflammation, with swelling of right ankle-joint. Temperature 102.2° ; pulse 112.

5th. Condition about the same; temperature 102.6° ; pulse 115.

6th. Temperature 103.2° ; pulse 125; a plain systolic endocardial murmur, not possible to localize, developed. Choreic movements of left side commenced, manifested by tossing of left arm and leg. Spasm of muscles of left side of face. Mild hysterical form of delirium. Chloral given, under the hypnotic influence of which the choreic movements were suspended.

7th. Temperature 100.4° ; pulse 130; chorea general and violent; constant and forcible tossing of limbs, bouncing of head and body, incessant champing of lower jaw and working of tongue; pupils dilated; harsh, dry cough; foaming at the mouth and spitting tough, frothy mucus; general venous fulness and duskiess of skin; no sign of con-

sciousness. Murmur continues. Kept under influence of chloral all the time, gr. x of which drug insures a quietude of one hour. Ordered also potass. iodid., gr. v every three hours, on noticing that a peculiar accent of the father arose from loss of soft palate and partial loss of vomer.

9th. Temperature 100°; condition about the same as day previous; murmur softer. Dr. A. E. Jones in consultation. Treatment continued.

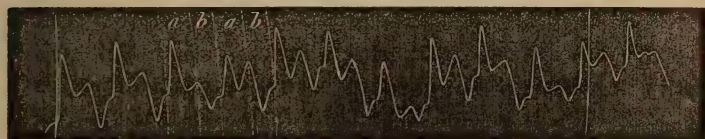
10th. Temperature 102°; pulse 132. Dr. Keyt kindly visited her with me, and with his sphygmograph obtained the cardiogram which will appear further on. The murmur continues well marked, soft and purring, systolic, diffused, not to be certainly localized but rather more accentuated at left base and beyond to the left. As the father, who was strongly prejudiced against chloral, vehemently objected to its use, and as the patient was now semiconscious and the chorea much moderated, the chloral was suspended and potass. bromid. substituted. On the 11th, 12th, and 13th the muscular movements were much quieter. There was so much motion, however, that, under the bar of hypnotic aid, the pulse and temperature could not be taken. At times she was perfectly intelligent, alternating with intervals of seeming hysterical delirium. Took nourishment well; bowels regular. Feces and urine passed in the bed. On the 14th the movements again became violent. Without restraint, the patient would be bounced from the bed. She was several times thrown upon the floor. The various antispasmodics had no effect. On account of the objections to chloral, hypodermic injections of morphia were resorted to. Injections of gr. $\frac{1}{4}$ were made at intervals of half an hour until gr. j had been introduced, without the slightest perceptible effect. After another trial of hypnotics and antispasmodics, the movements increasing in power, on the evening of the 15th I injected at short intervals in increasing doses until gr. $1\frac{3}{4}$ of morphia had been administered, with only the very slightest effect. Returning at 11 o'clock at night, the bed was found broken down by the combined spasmodic action of the patient and the mother's endeavours of restraint. I remained until after two o'clock of the morning of the 16th, when she was left fairly quiet under the influence of chloral surreptitiously administered. On the morning of the 16th, shortly after 9 o'clock, on making my visit, the mother came rushing wildly out into the yard to meet me, saying her daughter was dying; that a moment since she awoke, asked her to bring a drink of water, and immediately after partaking of it a fearful spasm seized her. On my entrance, the body presented resting on the occiput, elbows, and heels; eyes open and staring; hands tightly clenched; dead.

Autopsy, twenty-nine hours after death, conducted by Dr. L. R. Longworth; present Drs. A. T. Keyt, A. E. Jones, and myself. Body straight. Cadaveric rigidity perfect. Marked general post-mortem discoloration. Deep reddish-brown circular spots, from three lines to half an inch in diameter, scattered over surface, more especially on chest, back, and face. Over the upper part of right scapula were ten or twelve irregularly dispersed slightly depressed cicatrices, and from a line to three lines in diameter. Abdominal section revealed all the contents normal, with exception of liver, which was slightly congested and showed two yellowish-white patches, the size of a pea, just beneath the capsule—one upon the anterior upper surface and the other situated in the right lateral inferior aspect. In the chest the lungs were healthy, but the left lung contained a calcareous nodule the size of a filbert. The lungs were entirely free from any appearance of congestion. In the right ventricle of the heart, reach-

ing into and filling up the pulmonary artery, was a firm, slightly adherent, perfectly decolourized clot two and one-half inches in length; and in the left ventricle was a very small yellowish-coloured clot of softer consistence. The heart returned no evidence of lesions of valves or substance. The brain and spinal cord and their investments were normal, but contained a large amount of serous fluid, bathing everywhere the convolutions, and which, upon the removal of the calvarium, gave the brain an appearance of being too large for its cavity. It was what has been termed a watery brain.

The first in order of clinical phenomena is the rheumatic inflammation of the ankle-joint. Then follows an endocardial murmur, with limited muscular spasm and intellectual derangement at first, passing into general convulsions and coma, as a result of thrombosis in the right heart, the consequence of the well-known hyperinosis of the blood in rheumatism. Richardson and others differentiate symptomatically between thrombi of the right and left heart. Convulsions and coma are assigned prominently to fibrinous deposits in the latter, while restlessness and delirium are put down as belonging more particularly to the former. But these are tokens rather of degree of obstruction of the blood current through the heart than of place. The experiments of Astley Cooper, Kussmaul and Tenner, Brown-Séguard and others, show that the deprivation of the arterial blood supply causes these manifestations, occurring, as they may, from direct obstruction to the onward flow in the left ventricle, or from pressure backward in the venous trunks by obstruction seated in the right heart.

No. 1.



No. 2.



It is here that the cardiograph becomes of practical utility. Cardiogram No. 1, obtained by the sphygmograph of Dr. Keyt, which is a perfect cardiograph as well, strikingly exhibits an impediment in the central circulatory apparatus by the disproportionate length of the ventricular systole and the shortness of diastole as compared with a normal heart tracing in No. 2.

No. 1 is the heart tracing of the case forming the basis of this paper,
No. CXLIV.—Oct. 1876. 26

taken on the 10th of November, when the patient was quiet under the influence of chloral. No. 2 is that of a healthy lad, aged seventeen years. The space between the dotted vertical lines, *a, a*, is the length of the ventricular systole, and the space between the dotted vertical lines, *b, b*, is the length of the diastole. The plain vertical lines at the extreme right and left of the tracings represent by the space between them the run of the stage in five seconds of time. By examination of the normal cardiogram No. 2, it will be observed that the systole occupies just one-third of the entire cardiac revolution, while the diastole takes the other two-thirds. Cardiogram No. 1, on the other hand, gives to the systole more than one-half (four-sevenths) of each heart round. Of what pathological significance was this abnormally long systole? Plainly, it indicated that there was resistance to free ventricular discharge, and the thrombus found in the right ventricle and pulmonary artery, in the absence of other lesion—of valvular insufficiency, of valvular or arterial stenosis—reveals beyond question, to my mind at least, the secret of that resistance. That it was not due to the small clot in the left ventricle, which was undoubtedly a post-mortem change, is proved by the condition of the lungs. In such event, these organs would have been markedly congested. Tracings of aortic stenosis show the same lengthening of the systole, not so great, however, as in No. 1.

The condition of the brain from the impediment in the heart was that of anæmia. This is disclosed by the watery infiltration discovered post-mortem. The venous blood dammed back from the right side of the heart transuded into the brain substance, compressing the vessels and giving origin to the choreic outbreak. It can be attributed to nothing else. There was no connective tissue hypertrophy, and therefore no sclerosis of gray matter.

The murmur heard in this case corresponds with that described by Walshe and others as occurring in thrombosis or embolism of the heart. Alone, it is of value only as pointing to the seat of the trouble, but taken in connection with the cardiograph, the nature of the lesion may be diagnosed. Walshe has also pointed out how the murmur may disappear and reappear according to the position of the clot. As an instance of how theory may lead one astray from a correct appreciation of murmur, we may cite a case reported by Dr. Balfour in the *Medical Times and Gazette* for December, 1874, in which, to give support to the view of Quinke, of Berlin, of systolic pulmonary murmur from insufficient lung expansion over the pulmonary artery, he entirely overlooks the decolourized clots found in all the chambers of the heart, and completely filling up the pulmonary artery.

In regard to the closing scene. It is in perfect accord with the march of pathological events—first a plug in the right heart, then extending into and suddenly blocking up the pulmonary artery. Not more surely would

hanging produce strangulation, and not more surely in one case than in the other would the deprivation of the blood supply to the muscles excite in them tonic spasm.

WALNUT HILLS, Cincinnati, Ohio.

ART. IX.—*Case of Rupture of the Uterus; remarkable for its comparative causelessness, so far as known, and the Absence of the usual Antecedents.* By ISAAC G. PORTER, M.D., New London, Ct.

APRIL 10, 1875. Called at 7 A. M. to Mrs. G., residing four miles distant; æt. thirty-nine years; mother of three children, the youngest born two years since. Having been with her at that time, and also at the preceding birth, I can testify that her labours were short, and in every respect favourable. There existed, however, a constitutional tendency to obesity and relaxation. Found, on arrival, that her pains, which had been slight, had subsided, and after waiting an hour, an examination was instituted to learn the condition and progress of the labour. It was with difficulty that the os uteri, which was closed, could be reached, so high was it in the vagina. Anterior obliquity was strongly marked. The day having passed without pain, I was again summoned in the evening, arriving between 8 and 9 o'clock. The labour was far from active, indeed, another false alarm was anticipated. The position of the uterus was as before described, the os being slightly dilated, and still reached with great difficulty, owing, as I thought, to extreme anterior obliquity. To remedy this, a finger was inserted within the os, and slight traction made to draw it forward, while lifting efforts with towels beneath the abdomen, externally, were carefully made, the patient lying on her back. At 10 o'clock the pains became somewhat more active, but were far from satisfactory, and so continued until 11.30 P. M., when, for a few minutes, they became strong, being aided somewhat by voluntary efforts, but not violent. So little benefit did I expect from them, that, to avoid unnecessary assistance and to abridge the tedium of waiting, I was sitting in an adjoining room, the connecting-door being open, when the attendants came rushing in, saying that something had burst in her last pain and that she was in great agony. I found her countenance greatly changed, hands and feet bathed in a cold sweat. The pains had ceased, of course, and there was slight flooding. A vaginal examination revealed a large rupture of the cervix, the hand readily reaching the head of the child, while the body was still covered by the uterus. A consulting physician, Dr. R. A. Manwaring, soon arrived, and it was thought advisable to deliver by turning, which I accomplished with little difficulty; the child, however, being dead. The placenta soon followed, and the patient rallied fairly, and subsequently gave some promise of recovery. She died, however, on the fourth day. The child, I may add, was not disproportionally large.

Two years before, as stated, after an easy labour, she was delivered of a full-grown child. Is it probable that, within the period named, any permanent obstruction could have formed to prevent the descent of the

head at the superior strait? In Dr. Trask's series of cases, anterior obliquity is only once assigned as the cause of the accident. Doubtless, anything which impedes the course of labour exerts an influence in favour of rupture. In an entirely healthy uterus, the existing obliquity may not have been adequate to produce the result; but it is not so when conjoined, as it may have been in this case, with fatty degeneration, friability, atrophy, or thinning—causes, all of which are usually recognized in most treatises on this subject, and particularly by Drs. Murphy and Trask. It is to be regretted that, through distance and other unpropitious circumstances, no post-mortem examination was made.

The case is remarkable in its sudden and unexpected termination, which was truly appalling. True pains, which were never violent, occupied but little over an hour, cutting themselves off suddenly, as if conscious of utter incompetency. So far as known, the rupture may be said to have been, etiologically, idiopathic and almost spontaneous.

The foregoing history was recently (July 20) forwarded to Dr. James D. Trask, as appropriate to his forthcoming supplement to his valuable labours on this subject. I regret to say that his family have returned the same to me, as requested (after taking a copy), with the information that the doctor is absent, being compelled by ill health to cease work, and that the promised article is not ready. An opportunity is thus afforded for an additional observation.

It is well known that a more limited view of the causes of this accident than this case would seem to authorize, is maintained by Bandl and others. His conclusion, as drawn from thirty-two cases as observed by himself, and as taken from the records of the Vienna Lying-in Hospital, is as follows (I quote from the last No. of this Journal, p. 289): "He has not found, in one single case, that pathological change in the substance of the uterus, which has so generally been assigned as a predisposing cause, more especially in multiparæ. The uterus was always thick, well contracted, high up, and the cervix very thin." . . . "The fissure was nearly always found in the cervix." . . . "He believes the rupture is always due to disproportion, and agrees with Chiari, Braun, and Spaeth, in considering that the abnormality is due to an excessive thinning of the cervix, occurring during labour." . . . "In normal circumstances the cervix is drawn over the head of the child by the muscular uterus; the *orificium internum* remaining about on the level of the brim of the pelvis. If there is a disproportion, which does not allow the presenting part to descend into the pelvis, the cervix is abnormally stretched," etc. "He believes that rupture can be recognized as threatening, when the internal orifice gradually ascends, whilst the cervix stretches, and the fundus acquires a lateral position."

The foregoing rationale is entirely unsatisfactory, as applied to the case before us. The "lateral," or anterior obliquity of the uterus existed at the outset, and was not the product of labour, and yet, doubtless fur-

nished a part, or the whole of the "disproportion" claimed as necessary. It was not as excessive as sometimes noticed where the evil has been overcome without great difficulty, and yet its action alone was, probably, inadequate to the result.

As to the thinning of the cervix by the force of labour, in this case the stress, violence, and continuance of the latter were entirely inadequate to produce so grave a pathological condition. Very probably such thinning existed, but it must have originated prior to labour. Besides, we are often informed of cases where the rupture occurred in the "fundus," or "body," of the uterus, as shown by the autopsies.

As a practical appreciation of the foregoing, may we not deduce the principle, that "anterior obliquity" may constitute, in certain relations, a more serious obstacle to delivery than is usually taught, or believed?

ART. X.—*A Case of Splenic Leucocythæmia, exhibiting marked temporary improvement.* By F. C. CURTIS, M.D., of Albany, N. Y.

THE following case of an uncommon disease presents some unusual symptoms which render it of sufficient interest to be placed on record:—

The patient, Daniel W., aged 39, a native of Albany, a fish-curer, with a family history clear with the exception of rheumatism, had an attack of rheumatism himself at the age of sixteen, and again another a year later. No heart complications were noted. With this exception he had always been healthy. At the age of eighteen he went West, and for four years was in the region of the Mississippi, up and down the river, much of the time in malarial districts, but, as far as he knew, never was affected with any malarial disease. His early life was rather irregular, but for a number of years he has been a sober, quiet, domestic man.

Four years ago he began to have night-sweats, which continued up to the advent of more urgent symptoms, within a year, with considerable constancy. Sweating took place almost every night, and was often very profuse. His skin became sallow, and he rather lost strength, although able to work until within a year of his death. He was of spare habit, and did not emaciate then or subsequently to any marked degree. His appetite was variable, but fair. He applied for relief of his night-sweats, and the usual round of remedies was tried, all having a temporary effect, and all failing eventually. There was no material change in his symptoms until a year previous to his death. Then he began to experience a dull, heavy feeling in the left hypochondriac region, increased by lying on the left side. Œdema of the feet also came on. In March, 1875, a protrusion of the cartilages of left lower ribs was noticed, and in May this grew so marked that he came to the office for examination. It was found that this side of the abdomen was occupied by a smooth mass, reaching fully to the median line at the umbilicus, the edge being sharply defined, and rounding off below into the pelvis, the upper limit being found by

percussion to reach about to the sixth rib. The outline of the tumour was quite appreciable on inspection alone, the abdominal walls being thin. There was no tenderness on pressure over the mass, and its surface was perfectly smooth. The lymphatic glands were nowhere enlarged. Examination of the blood microscopically showed the number of white blood-corpuscles to be largely increased.

Various remedies were tried. In addition to a general tonic, quinia, which had been given previously for night-sweats, was resorted to in large doses, also in combination with arsenic; and, finally, iodide of potassium in 5-grain doses in a bark and iron mixture, a mercurial plaster being applied over the enlarged organ. Under this last combination a slight diminution in the size of the spleen took place.

Early in July a new symptom set in; he began to experience dizziness, which lasted until he took to his bed. He walked with his legs apart, and with a groping gait, and had to use a cane to steady himself. When sitting down, and with everything quiet about him, this feeling entirely disappeared; but if objects about him were in motion, as when riding in a horse-car, he "felt as if everything was turning upside down."

He continued about until October, feeling fairly comfortable, somewhat asthenic, not much emaciated, and without marked cachectic appearance. There was a tendency to diarrhœa, especially after an acute attack of that disease in July. Dyspnœa was not noted. At the end of October he was taken with a profuse diarrhœa. He kept about for a week, and was then obliged to take to his bed, bronchitis and congestion of the lower portion of both lungs also coming on. No ordinary means served to check the diarrhœa, which averaged eight or ten semifluid stools per diem; and when the number of passages was diminished, he invariably felt worse. His pulmonary symptoms soon became urgent. Dyspnœa grew marked; auscultation showed congestion, and probably œdema of both lower lobes of the lungs. These urgent symptoms were relieved by direct treatment in a measure. He was put upon the use of cod-liver oil, which he assimilated readily. Quinia and strychnia, with a bitter tonic, were also given. Iron, which was repeatedly tried, he could not bear. His symptoms all gradually improved, and toward the end of November the most remarkable fact connected with this case became apparent—the spleen began to rapidly diminish in size. Its edge, which reached a little beyond the median line at the umbilicus, receded till it was four inches to the left. It stopped at this point, and grew no smaller; neither did it again increase materially at any time, the edge being occasionally about half an inch nearer the median line; but care was necessary to put him in a uniform position, as the mass was movable, and could be lifted considerably to the right. The lower edge also came up out of the pelvis gradually and steadily. This diminution I am disposed to attribute mainly to the watery diarrhœa; perhaps in a measure also to the cod-liver oil, which was given not only as a nutrient, but with a view also to the property that has been ascribed to it of increasing the number of the red blood-globules. His general condition gradually improved from the low state he was in during November, and he gained in strength so as to be able to sit up most of the day. His tongue was lightly coated, but was over-moist, almost dripping—or, if I should invent a suggestive term for this condition, which is not uncommonly met with, and which I have learned indicates a state of very poor physical reaction—I would call it a "dog's tongue." It is seen in the

latter stages of organic diseases, and in some prolonged malarial fevers. The pulse was uniformly between 80 and 90; respiration 24.

After two attacks of venous thrombosis in December, he rallied very well, and made steady improvement in every respect, even as regards the size of the spleen, until the middle of January. But it is not my fortune to place on record the first case of recovery from leucocythæmia. He was taken, January 17, with chill and pain in the right side, with dyspnœa; and I found the pleura half filled with serum. This increased rapidly; orthopnœa and sleeplessness exhausted him completely, and he died ten days after the onset of the pleuritic attack.

An *autopsy* was made the day following his death. The right pleura was found filled with serum; lung flattened and collapsed. There were shreds of fresh lymph on the pleura. The pericardium was adherent to the heart. The right side of the heart was filled with clotted blood, which may be described as of a raspberry-chocolate colour. The veins and venous cavities throughout the body showed this same curiously tinged, clotted blood, excepting some small veins which were filled with casts of a white colour, and very firm, a knot of them having quite the appearance of a bunch of worms. The heart was enlarged; the mitral valves were thickened; the aortic valves atheromatous, with points of calcification—spots of the same being also found on the aorta.

The spleen was adherent to the liver and other surrounding organs. Its capsule was thickened. It weighed about six pounds, and measured in its long diameter ten inches; transversely, seven and a half inches; and the thickness was five inches. As already mentioned, it had been much larger than this, but even such a magnitude is greater than occasionally reported. The notch was preserved; its tissue was hard and firm. Alcohol failed to preserve it, so unfortunately no microscopical examination was made.

The liver was also much enlarged, being eleven inches long, ten inches wide, and five and a half inches thick. It was apparently fatty.

The kidneys were large and white, having a thin cortical portion and a congested appearance of the pyramids, although the urine on examination during life was normal, except that it contained constantly the usual large amount of amorphous urates. There was no enlargement of any of the lymphatic glands.

The blood, about which the diagnosis of this case turns, was examined several times before death by myself and others. All specimens contained large colourless corpuscles in very greatly increased numbers. Dr. E. R. Hun said that, in a specimen which he examined, there were fields in which hardly a red globule could be seen. I am indebted to him for sending a specimen of the post-mortem blood to Dr. Jos. G. Richardson, of Philadelphia, who examined it with interest, and has very kindly reported to me the results of his investigations. He writes:—

"The specimen of blood from your case sent me by my friend, Dr. E. R. Hun, is very markedly leucocythæmic, the estimated proportion of white to red corpuscles being as 1 to 2, instead of 1 to 335 (the ratio given by Welcker in Stricker's Handbook). The method of enumeration I adopted was a plan of my own, although, I dare say, it may have previously occurred to other observers, viz., simply to spread out the blood in very thin layers upon a slide and allow it to dry; then, selecting suitable fields which were not too crowded, put on the cobweb micrometer eye-piece, and, adjusting the threads so as to cut off convenient spaces, count the red disks and white corpuscles respectively

in each. By this plan any error from motion of the corpuscles is, of course, obviated.

"It may be worthy of note that the white globules in this specimen were unusually large, ten in a group which were measured averaging $\frac{1}{2183}$ of an inch, and one attaining the enormous magnitude of $\frac{1}{1788}$ of an inch. This peculiarity as to size of these corpuscles has been observed to sometimes occur by Professor E. Wagner, who mentions it in his *Manual of General Pathology*, page 546, American translation. Of course, this immense enlargement may not have existed during life, and been merely connected with some post-mortem change in the *liquor sanguinis*, although my impression is that such was not the case."

In connection with this last statement, Dr. Richardson refers to an experiment, detailed on page 5 of his lecture on the Nature of the Salivary Globules and their Identity with the White Blood Corpuscles, which showed that, by diluting the serum of the blood by the aid of a filament of thread passing from a reservoir of fresh water to the covering glass under the microscope, a white corpuscle was seen to "gradually expand, displaying its delicate wall, with two rounded nuclei; then, after acquiring the magnitude of $\frac{1}{1700}$ of an inch, it exhibited the rapid and incessant movement of its contained molecules; and finally, when its diameter reached about $\frac{1}{1400}$ of an inch, it burst suddenly, discharging a portion of its contents."

In the specimens which I examined, taken during life, the proportion of white to red corpuscles was apparently much greater than that found by Dr. Richardson in the partly coagulated post-mortem blood, although no systematic counting was attempted.

I will do no more than conclude the simple detail of this case with a brief allusion to its more salient peculiarities. A very instructive analysis of a number of cases, by Dr. Edward G. Janeway, has not long since appeared in certain issues of the *New York Medical Record*; and I offer this as a contribution to the fund of cases from which such general facts are drawn.

A slight diminution in the size of the spleen followed the exhibition of iodide of potassium, but there was no history of syphilis.

Giddiness was a symptom peculiar to this patient, for I find no allusion to it by any author. It was very marked and persistent, not merely the result of anæmia, but evidently due to disturbance of brain function.

The rapid and very considerable diminution in size of the spleen is a noteworthy fact in this case. Occurring after very free diarrhœa suggests the idea that it was brought about in a measure thereby, especially as checking this was invariably followed by unpleasant symptoms.

Observation of this disease does not appear to have thrown much light upon the physiology of the spleen. The great objection to the theories both of Virchow and Bennett, that destruction of red blood disks or the manufacture of white ones in excess results from hypertrophy of this organ, exists in the fact that hypertrophy very frequently takes place without corresponding blood change. Spleenotomy, moreover, is done

with impunity to dogs; and more or less complete removal of the spleen has been performed in man with success, M. Péan, in 1867, having removed the entire organ without ill result in a supposed case of ovarian tumour, which proved to be a large cyst of the spleen. These facts show that we have no definite knowledge of any important function of the spleen, and that we have no satisfactory data thus far whereby to determine the essential nature of a malady which, when of the splenic form, appears at first thought to be a functional disease of this organ.

ART. XI.—*A Case of Dislocation of both Hips.* By J. B. CRAWFORD, M.D., of Wilkesbarre, Pa. (With a wood-cut.)

ON July 13, 1876, I was called, by a physician of this city, to see Thomas Jones, a large and powerful man, aged about thirty years, who had been injured four or five hours previously while working in a coal mine, by a mass of rock from the roof of the mine falling upon him.

Upon examination, we found a dislocation of both hips; the head of the right femur resting upon the dorsum of the ilium, the leg flexed upon the thigh, the knee lying upon the lower portion of the opposite femur, and the toes turned strongly inwards.

The head of the left femur was displaced in a somewhat different manner, the head being in the ischiatic notch. The limb was nearly straight, the thigh being but slightly flexed upon the body, the knee nearly un-bent, and the toes inverted. The accompanying sketch shows a pretty correct representation of the appearances presented. There was inability to move either limb. The lower portion of the spine was strongly arched. The amount of shortening of either limb could not be ascertained, as measurement was not available. The amount of deformity of either hip was less conspicuous than is usual in single dislocations of the same kind.



The patient was thoroughly anesthetized, and the reduction effected by manipulation. First flexing the left leg upon the thigh and the thigh upon the pelvis, I pressed the thigh obliquely across the abdomen, at the same time rotating the femur, using the leg as a lever, and then carrying the knee across to the left side, lifted the thigh to a right angle with the body, and made moderate vertical traction. I felt a sudden releasing of

the head of the bone, and easily drew the limb down to its natural position. After dislodging the head of the bone from the ischiatic notch, it glided so readily and so noiselessly into its proper place, that I was a little surprised to find that I had effected its reduction. There was almost entire absence of the "*thud*," with which the dislocated femur usually returns to the acetabulum. Considerable force, accompanied by rotation of the femur, was required to carry the flexed thigh across from the right to the left side of the abdomen; all the other movements were effected with comparative ease. Not more than two minutes were occupied in the process of reduction. The reduction of the remaining luxation was now proceeded with, and was attended with more difficulty than the first. Adopting the method usually recommended, I first moved the limb in the line of its easiest motion; flexing the leg upon the thigh, and the thigh upon the pelvis, as before, carrying the knee well upward and obliquely across the median line of the body. Then attempting to abduct while rotating the limb, I found the movement in that direction suddenly arrested. Again, pressing the thigh firmly upon and obliquely across the abdomen, and abducting and rotating as before, I succeeded in disengaging the head of the bone and bringing it apparently to the posterior border of the acetabulum; but upon bringing the limb down to a horizontal position, I found that the head of the femur had returned to its former situation upon the *dorsum ilii*. The previous manipulations, varied somewhat, according to the methods of different authorities, were repeated several times with the same result. Finally, having brought the head of the femur to the posterior border of the acetabulum, and finding it again arrested at the edge of the socket, I directed the pelvis to be held firmly down by two assistants while I made strong upward traction upon the thigh while it was bent at a right angle with the body. After applying my utmost strength in this direction for perhaps a quarter of a minute, I felt a sudden yielding of the resistance, and the dislocated bone returned to its socket with a sound that was heard distinctly by all who were present. But little subsequent treatment was required. The patient was taken to the Wilkesbarre City Hospital, ordered to be kept quiet, and a soothing lotion applied over the injured parts. Very little subsequent pain was complained of. He left his bed on the 23d of July, ten days after the reception of his injury, and walked about the ward with but slight difficulty.

Luxation of the hip is by no means a rare accident among those engaged in the mining of coal, as every surgeon, who has practised long in the anthracite coal fields, can attest. The frequent and sudden dislodgement of large and heavy masses of rock forming the roof of the mines, and the powerful machinery required in the preparation and transportation of coal furnish the immense forces which are requisite to the production of this injury. But frequent as single dislocations of this joint have been in this vicinity, I am not aware that any case of double luxation of the hip has occurred in this region, save the one here described, except as it has occurred in connection with other injuries of a fatal character. Indeed, I believe the records of surgery furnish but a very few examples of a similar kind. Dr. Gross in his *System of Surgery* says, the accident is exceedingly uncommon, and mentions but three instances of its occurrence: one recorded by Professor Gibson, one by Wm. Cooper, of London, and one

which occurred in the practice of Dr. Boissonot, of Philadelphia. Hamilton, in his work on Fractures and Dislocations, mentions only a single example of this injury, that of Professor Gibson. Each of these cases, where the particulars are given, differed from each other, as well as from the one here recorded in regard to the character of the dislocation; in one the displacement being iliac and thyroid, in the other iliac and pubic, while the one here recorded was iliac and ischiatic.

The exceedingly small number of cases in which both hips have been dislocated, would seem to indicate that the conditions which render such an occurrence possible are very rare and peculiar. I have, therefore, taken some pains to learn from the subject of this report what the circumstances were which attended his injury. He states that he was at work, standing on a surface which inclined at an angle of about forty degrees, with the feet widely separated, the right one being much lower than the left, and the body bent forward. While in this position a large mass of rock, weighing many hundred pounds, fell from the roof, several feet above him, striking him in the lower dorsal region, bending the thighs upon the body and pressing him forcibly down upon the rock on which he was standing. He is certain that both joints were dislocated at the same instant, as the falling rock immediately rolled or slid from and released him. Severe bruises upon his back, and a deep cut on the right;— were the only other injuries received.

WILKESBARRE, July 28, 1876.

ART. XII.—*Details of a Case, in which Death is supposed to have resulted from Ether used as an Anæsthetic; with a Brief Account of all the Fatal Results which have been ascribed to the use of Anæsthetics at the Pennsylvania Hospital; with Remarks.* By THOMAS G. MORTON, M.D., Surgeon to the Pennsylvania Hospital.

DAVID D. P., aged 19, single, a telegraphic operator, consulted me in May, 1876, in regard to his right limb, which was quite useless from general atrophy, and an angular partial ankylosis of the knee, evidently a result of old scrofulous inflammation. I advised division of the flexor hamstring tendons, which were very much contracted, and immediate straightening of the limb, and directed an appropriate brace to be made, with a high heel and sole to the shoe for after use. On the 2d of June the patient was admitted into the hospital, when the following notes were made by Dr. W. B. Hopkins, the resident in charge: "Until the patient was two years old, when he began to walk, he had been considered a perfectly healthy child; soon after this a posterior spinal curvature developed; when four years old, inflammation of the knee set in, with subsequent contraction of the flexor thigh muscles, with general arrest of development in the limb, and subsequent partial ankylosis of the knee-joint; the angle

of deformity being slightly obtuse, there had been, apparently, no suppuration of the joint, at least to the extent of an abscess."

"The spinal and limb troubles combined prevented the patient from walking until he was six years old, when, with crutches, he began to get about; there is no history of winter cough or previous chest trouble, and his general health, although not being vigorous, seems not to have been markedly impaired, and no evidence of any hereditary disease can be traced out. The patient is rather pale, but his appetite is good, and he expresses himself as in excellent health; there is marked posterior curvature, which has produced the usual deformity, with great sternal prominence. The right limb is much atrophied and shortened, and presents angular deformity, with a partial luxation backward of the tibia, the ankylosis not being complete. June 3, after a consultation with Drs. Hewson and Hunt, the tendons were divided, and the limb was straightened, and the apparatus, made especially for the case, was adjusted by Mr. Kolbé."

The etherization was conducted by Dr. Wharton, one of the resident physicians; at the close of the operation I saw that the patient was pale, somewhat depressed, but as comfortable apparently as we generally observe after the use of an anæsthetic. The patient was left in charge of Dr. Hopkins, whose subsequent notes are as follows: "At 12.30 P. M., patient, having been removed 15 minutes ago to his room, was seized with symptoms of asphyxia; pulse moderately full, 160; respirations nearly ceased; general cyanotic condition more marked in the face and tips of the fingers; his tongue was at once depressed, cold water dashed on his chest, which produced only violent respiratory efforts. At 1 P. M. condition remains much about the same, and there being evidences of pulmonary engorgement, with frothy blood-stained mucus, constantly collecting in the throat, while the heart's action was active and laboured, the radial artery was opened, and about 8 oz. of blood were drawn; dry cups were applied to the chest; for a time the respiration seemed slightly improved; the volume of the pulse increased somewhat, and fell from 160 to 152 per minute. At 1.45 rapidly sinking; hypodermics of whiskey and carbonate of ammonia were used without avail." Dr. H. sent me the following note: "P. died at 2 P. M.; about ten minutes after the operation he was removed to his room, being perfectly conscious, and I having seen to it that he had perfectly recovered from the ether, he suddenly became asphyxiated; the ordinary remedies proved of no avail."

Dr. Morris Longstreth, the hospital pathologist, made the *post-mortem* 21 hours after death. "The rigor mortis was well marked; there was considerable deformity of the chest; the lumbar portion of the spinal column was at its lower part bowed backwards, so that the last two vertebræ were nearly in a right line with the upper portion of the sacrum, thereby making the cavity of the pelvis very capacious. The abdominal viscera were normal, although somewhat out of position. Thorax—the pleural cavities contained a considerable amount of serum, included in the meshes of an abundant firm net-work of inflammatory adhesions (old). The serum contained no recent lymph, and it was impossible to determine its quantity, on account of the very great amount of similar serum pressed out from the lungs in the process of their removal; the lower part of the right pleural cavity was, to a considerable extent, obliterated by very firm adhesions existing between the diaphragm and the costal pleura. The amount of serum was not very great at any one portion of the pleural sac, but rather diffusely infiltrating the adhesions present. Both lungs were

moderately well crepitant throughout, pitted deeply on pressure everywhere; on section, serum frothy and a little bloody exuded with great freedom and in large amount, as though from a saturated sponge; their cut surface was grayish, showing some blood points; there was no solidification or even deep congestion of their tissues. Divided portions as well as the whole floated well in water, and there was no evidence of plugging of their vessels, and the blood in them was entirely fluid. Pericardium contained a considerable amount of clear, very pale serum; the heart was only moderately in a state of muscular contraction, a slight amount of fat covered its surface along the grooves; the blood within the cavities was quite fluid; the muscular tissue, the valves, and the large vessels were all normal. There was no foreign substance of solid nature discovered in the larger bronchi or in the trachea. The other parts of the body were not examined."

The unfortunate result in this case, apparently caused by ether, naturally produced, not only upon myself, but upon those who had a knowledge of it, a profound impression, as it was seemingly a proper one for the use of the anæsthetic. Ether or "washed ether" as an anæsthetic agent has been uniformly looked upon as perfectly safe; personally, I have administered it on all occasions, at all periods of life, from infancy to extreme old age, with the feeble as well as in the strong. In giving ether I have never used any "inhaler," so called, but have invariably made use of a napkin or coarse towel, on which the ether is poured, when the cloth is then simply folded in a conical shape, and held over the patient's mouth and nose; so soon as the napkin becomes the least soiled or "ether-logged," a fresh one is substituted. Dr. Wharton, the resident who gave the ether in this case, says: "I am satisfied that not over two and a half or three ounces were administered in P.'s case; he seemed to be readily affected, and was not under its influence over twenty minutes. There was no vomiting, and the respirations were not laboured; on removal of the napkin he rapidly regained consciousness." Although this patient had a marked spinal curvature, with chest capacity below the average, anæsthesia on this account was not contraindicated, for I have frequently used ether in cases where the deformity of the chest was much more marked without the least difficulty. The autopsy demonstrated that the lungs were seriously restricted in their natural movements by the adhesions which bound them down in all directions, and consequently the secretions which formed were not expelled; at the close of the etherization there was no evidence of any mucous collection, at least when I last saw the patient at 12 M.; fifteen minutes later, when Dr. Hopkins was called, the change was very marked, and it was during this short interval that the serious symptoms were manifested. Mucous secretion, which often rapidly forms, is one of the most annoying symptoms in the course of etherization; in many cases it is not observed at all, but when it occurs to any extent, it is much safer to suspend anæsthesia until the throat is thoroughly cleansed, or the patient is relieved by his own efforts. I have often ob-

served that those patients who have been the most difficult to manage while being etherized, are the easiest to keep anæsthetized after the first excitement of the ether has passed over, and seldom suffer from any mucous secretions. Gross,¹ when on the subject of death from ether, says :—

“ How the inhalation of ether proves fatal has not been decided ; when death occurs promptly, as during, or very soon after, the administration, the probability is that it is caused by asphyxia, whereas, when it occurs at a later period, as after the lapse of hours or days, there is reason to believe that it is due to the effects of congestion of the brain and lungs, either alone, or in conjunction with gastric irritability, which often exists in a most distressing degree.”

In P.'s case death was the result of the mucous secretion and serous effusion which invaded every available space, thus suffocating the patient ; there was not the least evidence of any intracranial difficulty ; the patient was quite rational to the close.

There is seldom any danger from ether when properly administered, and there is abundant evidence to show that fatal results are less likely to follow its use than any other anæsthetic agent. The fact of ether having uniformly been looked upon as a perfectly safe agent on every occasion may, I am inclined to think, have induced great carelessness in its use ; the occasional deaths from, or at all associated with ether, should in the future be sufficient to serve as cautionary signals, a constant watchfulness should be observed by the etherizer, and every symptom carefully noted, especially all complications arising from bronchial secretion, pulse failure, or vomiting, and I am satisfied that not only should the patient be watched by a medical man during anæsthesia, but until reaction has been thoroughly established, and the ether effects entirely passed over ; I have seen, as probably all surgeons have, ether poured upon the inhaler or napkin in great excess, so as to flow down on the patient's face and neck ; the cloth thus becomes saturated, is not pervious to air, and the patient almost suffocates ; such practice cannot but be severely condemned.

The assistant should devote his attention exclusively to the patient, while a few drachms at a time, with care, poured on the napkin will generally induce anæsthesia promptly ; when the napkin becomes the least soiled, another should be substituted, and when complete anæsthesia has been induced, occasional inspirations of pure air should be allowed. Ether has been most successfully employed in the Pennsylvania Hospital for more than twenty-five years ; it was introduced about 1850, and first used in a case of luxation of the femur, which resisted repeated attempts at reduction with the pulleys ; it is needless to say that after etherization no difficulty was experienced, and from that time to the present this agent has been in daily use, and with the few exceptions herein noted has been the only anæsthetic employed.

¹ Surgery, vol. i. 569, 5th ed.

Ten years or so ago, a mixture of ether and chloroform was occasionally used, but a fatal result which occurred, led to its final abandonment.

The subject referred to was a German, aged 35, who was admitted with severe railroad injury of the ankle. I performed an amputation of the leg, using ether as the anæsthetic; a rapid recovery followed; some necrosis of the tibia developed, and my colleague, Dr. Hewson, into whose care the case had passed, thought best to remove the dead bone; and accordingly on May 4th, 1865, the operation was undertaken. The late Dr. Ed. Rhoades, then the resident, in his report of the case, stated, "that the patient died in convulsions during the administration of an anæsthetic for the removal of necrosed portion of tibia; convulsions occurred before anæsthesia was produced; the mixture used was chloroform, two parts; ether, three parts; alcohol, one part." This patient had been a robust man, took ether at the time of amputation well, so that the unfortunate result cannot be laid at the door of the agent ether, but rather to that of the chloroform. I believe no post-mortem was allowed.

The second fatal case occurred about 1867; a feeble old man was admitted, with a strangulated hernia of some days' duration, into Dr. Hewson's ward; the patient was a hard drinker, he had suffered much from exposure and insufficient food; after etherization, it was found impossible to return the gut, and herniotomy was decided upon, the anæsthesia having already been kept up a considerable time; Drs. Hunt and Agnew were also present; the patient took ether badly, and soon after the operation was commenced, a copious bronchial secretion kept filling the patient's mouth, and during an effort to expel this a very large portion of the bowel was forced out; at this time the breathing became labored, and the pulse faltered, the mucus which collected could not be expelled, and asphyxia developed rapidly; the galvanic current and other remedial agents were vigorously tried, but the patient expired on the operating table. In this case the great feebleness of the patient, his previous bad habit, alcoholism in fact, associated with the depressing effects of the strangulated bowel, would have been almost sufficient to have induced a fatal result, had the operation been performed without ether; yet, the ether was unquestionably the immediate cause of death.

The only other fatal result associated with ether that I know of as having occurred in the Hospital was in the early fall of 1872; the subject was a man of 35 years of age, he came from the far west for amputation, was in the care of my colleague, Dr. Levis; a gunshot wound of the thigh had involved the femur, producing a comminuted fracture; consolidation, however, took place, but considerable necrosed bone remained, and abscesses with numerous fistulous sinuses formed, through which immense quantities of pus escaped; at last it became a question of life or limb. Just before the etherization, which was commenced in the ward, 20 grains of chloral were given, and when the anæsthesia was completed, the patient was carried into the amphitheatre, after having lain some little time in the hall leading to the clinic room, etherization being fully kept up; just as the operator was prepared to commence the amputation, collapse occurred and death followed at once; no examination, I believe, was permitted.

My friend, Dr. Hunt, some time ago¹ asked the question, "are the kidneys active eliminators of ether?" and at the same time reported the case

¹ Phila. Med. Times, Feb. 6, 1875.

of a young man brought into his wards with a crush which required amputation of the forearm; after a few inhalations of ether the pulse failed, and the patient seemed sinking; the etherization was suspended, and restoratives were applied, and the patient slowly reacted. In the afternoon another attempt was made to etherize, and after a few whiffs, a repetition of the morning's experience was threatened; the operation was performed without the ether; for a few days the patient did well, then rapidly grew worse, became feverish and delirious; the stump ceased to heal, surgical fever was diagnosed, but pyæmia was not marked. Death occurred two weeks after the injury, and the post-mortem showed the kidneys to be in a marked stage of fatty degeneration, which materially interfered with their eliminating power. No examination of the urine had been made, for there were no symptoms which seemed to call for such an investigation. Dr. H. remarks, "May not conditions of this kind often explain the unpleasant and even fatal action of an anæsthetic? The practical lesson is obvious: before a serious operation, should there be the slightest reason to suspect hidden trouble, examine the organs and secretions and be on guard." I counsel even more than this, that, before any operation or etherization, the urine may profitably be examined. Although I have never known ether to act in the manner noticed by Dr. Hunt, yet I can readily understand that with a uræmic condition, the additional ether-intoxication, the heart's failure may readily be accounted for. In quite a number of instances, however, when I have been compelled to use ether, at the same time well aware of an albuminous condition of the urine, no bad results were experienced. In a case lately of tumour of the breast, which was sent to me for operation, in a subject otherwise apparently robust, I declined to remove the growth after an examination of the urine, which showed a large amount of sugar.

In 1866 I used the nitrous oxide gas quite frequently in the hospital, not only in operations which were rapidly performed, but in a large number of major operations, including several thigh and leg amputations; in some respects the gas acted satisfactorily, but the intense venous congestion, and death-like appearance of the patient, and rapid pulse, which always occurred when anæsthesia was kept up for some minutes, made me very anxious.

Dr. J. D. Thomas, of this city, who has had a vast experience in the administration of gas for the extraction of teeth, having given it in more than sixty thousand cases, tells me that he has never had any bad results from its use. In minor operations, which can be rapidly performed, a small amount of gas is all-sufficient, and since there are no unpleasant after-effects, as we have sometimes from ether, it is on this account often a more satisfactory agent. The great drawback to the more general introduction of the gas is from the difficulty in carrying it about, while a long experience in its use has demonstrated that it is a dangerous agent when its

effects are continued for any length of time. Ether, on the contrary, may be used with impunity, for patients may be kept under its influence for hours, or even days, without danger. Some years ago my friend, Dr. E. Wilson, was called to a case of convulsions, after a forced labour at seven months. The patient had just completed the sixty-fourth convulsion. Dr. W. at once sent for ether; before it came another convulsion had passed over. He at once used this anæsthetic, and kept his patient under its influence uninterruptedly for four days and nights, using, during that period, more than *two gallons of ether*. His patient had no further convulsions, and finally recovered.

In order that I might know the kind of ether used at the hospital, I directed Mr. C. Wirgman, our apothecary, to address the well known chemists, Messrs. Powers & Weightman, on the subject, who replied as follows, under date of August 2, 1876:—

“Your letter asking for information in regard to the purity of the ‘washed ether’ which we supply the Pennsylvania Hospital has been received. In reply, we would say that we believe our article to be pure, the usually recognized tests confirming us in this belief. In making our ether we follow the process published in the U. S. P., and wash with water as a preparatory step to making the ‘stronger ether,’ the specific gravity, according to our own and other weighings, will vary from .7299 to .7324 at 60° Fahr., and never finish off less than ten gallons at a time. While we regret exceedingly the sad result in the case mentioned in yours, we cannot think the anæsthetic the cause, but rather due to some idiosyncrasy of the patient, having had no complaint from others supplied with the ether made at the time and from the same lot as that sent you.”

The histories of the cases which have been given, comprise all the unfortunate examples which are known to have occurred in the hospital; even these unfavourable results do not lessen in the least my entire confidence in ether as a safe agent, but with this, as well as with all anæsthetics, the details of the cases reported offer a caution, that in every instance the greatest care should be exercised, guarding against all and every source of danger which may probably arise. Thus the very slight mortality ascribed to or in any wise associated with ether may yet be lessened or entirely averted.

ART. XIII.—*Report of a Case of Fracture of the First, Second, Fifth, and Sixth Cervical Vertebrae, with Recovery and Autopsy.* By C. S. MAY, M.D., Second Assistant Physician, Connecticut Hospital for the Insane, Middletown, Connecticut.

THE following report of a case of fracture of the cervical vertebra at two points, with extreme compression of the spinal cord in the atlo-axial region, I offer to the profession because of the remarkable prolongation of life, with good physical health, and restoration of most of the neurotic

functions of the medulla spinalis, and because I can find no reported case of recovery after so severe lesions in the spinal column.

George H., aged 56, a native of Connecticut, was admitted to the Connecticut Hospital for the Insane August 30th, 1872. "Stout build, and general health good." This was the third attack of mania, the first occurring when he was forty-two years of age, at which time he was in an asylum for four months. I can find no account of the second attack. The present seizure has lasted for several months, and for the past few days he has been so violent that he has been confined in a jail.

I can ascertain nothing of his hereditary tendencies, excepting that his family is long-lived, of vigorous health and active habits. His habits have been those of a wanderer, having been a sailor, Californian pioneer, steam-boat engineer, etc. In June of this year (1872), he was, and for some time had been, at work in a lumber yard, quite sane, and doing the work of a common labourer. As he had lost a small steamer which he had owned, through having endorsed for others, he was at times unsocial, and depressed in spirits, but there were no other signs of mental disease, having recovered from his second attack of insanity several years before. While upon a pile of lumber, he stepped backwards upon a projecting board, and fell, probably not more than fifteen feet, striking upon the back of his head. When taken up he was unconscious, and, according to the statement of a relative who nursed him, he remained in this state the most of the time for a week. After that he was unable to feed himself for some time, although, as his nurse now remembers, he could move both upper and lower extremities a little. I could procure no account of the sensorial conditions, but the motor functions gradually improved from this time, so that in a little less than two months, he was able to crawl out upon a veranda of his house, and was found there one morning when his family arose. The treatment up to this time had been good nursing, and position, with blisters upon the nucha, tinct. iodinii, etc., during convalescence. He gained strength rapidly, but carried his neck stiffly. Shortly after getting out of doors he began to use bad language to strangers, to get in front of railway engines, and wander about at night. When admitted to the hospital, his neck was stiff and straight, without a semblance of grace, and its muscles stood out beyond the occiput from that bone to the shoulders, all of those in the posterior region being hardened, thickened, and appeared, when manipulated, like cartilage. He could nod the head slightly, but was unable to perform the rotary movements.

Below I give portions of the main history, as noted in the hospital case book, that his active habits may be understood, as well as to account for post-mortem revelations.

September 15. Two weeks after admission. Is somewhat noisy and mischievous. Requires large doses of chloral hyd. at night to keep him quiet and induce sleep.

October 15. Has been out to work upon the farm for a few days, and is somewhat improved. Eloped from those who had him in charge.

November 15. Returned from elopement. He went to his home, a distance of at least fifty miles, and he says that he walked all of the way. From this time, until his death, the account shows him to have been rude, noisy, filthy, discontented, and troublesome at all times. In April, 1875, he began to dribble urine, and upon examination with a sound I could detect a vesical calculus. And as for a year he had been disposed to crowd trash into his urethra, having removed from it at different times a suspen-

der button, which lay an inch from the meatus; and at another a vest-buckle of brass, rolled up with its points projecting; I could believe him when he told me that in the previous autumn, he pushed a rye straw taken from his bed into his urethra, where a piece of it was broken off and retained.

1875, *September 28*. Died from suffocation.

A large piece of muscular and tendinous structure was found wedged in the larynx, with the epiglottis raised. He was taking his supper of a coarse soup or stew, when he suddenly sprang from his seat, flung up both hands and fell, apparently dead. I saw him in less than five minutes. He breathed twice faintly. Had no pulse at the wrist, and being unable to resuscitate him, as a last resort I made an opening into the trachea, but could not induce a heart beat or respiration by any effort.

Autopsy eighteen hours after death.—Rigor mortis marked; body well nourished. The epiglottis was raised, and lodged firmly in the larynx was a large piece of beef, plugging the orifice of the rima glottidis. There were slight pleuritic adhesions in the anterior part of the upper lobe of the right lung. With this exception, the pulmonary organs were healthy and well developed.

The heart showed nothing abnormal, save a slight amount of atheromatous deposit in the walls of the aorta, just above its valves.

Abdomen. The stomach, liver, gall-bladder, spleen, intestines, etc., healthy. Both kidneys were of the large white variety, filled with mottled spots, and with the cortical substance thinned. The right kidney had a double pelvis, with two ureters, the latter passing to the bladder normally, one of them terminating at the proper point in the bladder, and the other about a half an inch above and anteriorly to the first one, both orifices presenting the same general appearance. The pelves of this kidney were dilated, and their walls were thinned. The bladder contained a phosphatic calculus shaped like a pear, which had formed around a piece of rye straw, pushed into the bladder not far from a year ago. It measured one and a half inches in the long diameter, and one and three-sixteenths inches in breadth, section showing the straw in its centre. The mucous membrane of the bladder was thickened, and about its base and neck where the stone had rested were phosphatic deposits, giving the membrane a rough, grater-like appearance. There was chronic inflammation and congestion of the membranous portion of the urethra, with dilatation of this portion of the canal. The rest of the urethra presented a healthy appearance, as did also the testes and prostate.

Head. Calvarium normal; dura separated readily. The Pacchionian bodies were normal, but between the external and internal layers of the dura, adherent to the external layer, on the right of the falx, and just posterior to the anterior fontanelle, was a small thin plate of bone, about an inch long, and three-eighths of an inch wide at its broadest end. This was perforated by canaliculi, like a section of one of the long bones, and was rough upon its lower face, and smooth upon the upper. The weight of the brain was fifty ounces, and there was no abnormality in its vessels, membranes, or structures, that could be discerned by the naked eye. Its ventricles were natural, but the choroid plexus was tortuous, and at least twice the normal size.

After removing the brain, the superior part of the sphenoid bone attracted my attention, and I found that it was loosened from the main bone, being attached to it only through the interposition of cartilage

easily cut with the scalpel. The specimen preserved and thus attached consists of the remains of the entire superior surface of the bone, and comprises that part which usually makes up the optic groove, olivary process, sella turcica, and middle and posterior clinoid processes. The uppermost portion of this detached piece is dense, and like new osseous formation, being divided longitudinally into two parts about equal in size, which are connected by cartilage. The small portion of bone underneath these is darker in colour and more spongy, like the natural body of the sphenoid bone.

As at this time I knew nothing of the patient's having had a fall, with injury to his neck, excepting an incoherent story told by himself, I did not care for the spinal cord, and I carried my bistoury down into the vertebral foramen to sever the cord below the medulla oblongata, and cutting as usual I discovered an unnatural constriction of the canal, which proved to be a flattening from before backwards. The foramen magnum was of normal size and shape, and I completed the section of the cord, now too much torn and haggled to be of value for examination. The cervical vertebra being removed, the axis was shown to have been subjected to severe fracture and dislocation, having been driven upwards and forwards, and the body of the bone tilted upwards and backwards, nearly obliterating the vertebral foramen of the atlas. Its body was also twisted to the right, and fully two-thirds of it lay to the right of the centre of the tubercle of the atlas, lying partly in and partly below the vertebral foramen of the latter, filling the foramen, so that, cleaned from soft tissues, it measures but one-fourth of an inch in the antero-posterior diameter at its widest point, and tapers from this in a crescentic form to two points, the distance between which is one and one-sixteenth inches, this making the lateral diameter, but it is so much narrowed on the left half of the crescent, as to have left no room for the cord at this point, being but one-eighth of an inch wide at the widest part of this half, diminishing from that to a point. The transverse processes of the atlas and axis are uninjured. About three-eighths of an inch of the right lamina of the atlas in the groove for the vertebral artery and first cervical nerve has been absorbed, leaving a gap of that length, which is partially filled by the right superior articulating surface of the axis. The axis is so twisted that its left superior articulating surface joins and had grown to the anterior half of the left inferior articulating surface of the atlas, and partial absorption of this part of the axis had taken place. The spinal foramen in the left transverse process of the axis is but half the size of that in the right; this being caused by the encroachment upon the canal of the callus which connects the articulating surfaces just above. The articular surface of the atlas at this point was partly absorbed. The odontoid process was broken off at its neck, and had grown by bands of new bone to the middle of the superior part of the body of the axis, and very firmly in the same manner to the whole of the posterior and superior surface of the anterior arch of the atlas. The axis had suffered more injury than the atlas, the only change in the latter being the fracture and absorption of its right lamina, noted above. The axis, however, has its entire character changed. The union between the two bones is very close, and the new formations, like all callus, are whiter and of firmer texture than the natural structure near it.

The articulation of the atlas with the occipital condyles was natural.

The third and fourth vertebrae were entire, and all of their articulations

normal, but the fifth and sixth cervical vertebrae are firmly united at all of their articulating surfaces, as were also nearly the whole of their left laminae; the bones appearing to have been firmly driven together, their ankylosis being complete, and their bodies thinner than usual.

There was no evidence of fracture about the bodies of these bones, but their union is firm, and their transverse processes seem to have been broken or comminuted, those on the left side sustaining most injury.

There are to be found recorded less than a half dozen cases of fracture of the atlas or axis, or both, with recovery or prolongation of life for any length of time. And so far as my researches extend I can find none in which the structural changes in the bone were so great, or the cord so much constricted, as in this.

In *Holmes's System of Surgery*, vol. ii. p. 396, Dr. Phillips has reported a case in which the atlas, through indirect violence, had been driven down upon the axis, but the vertebral canal had not been encroached upon in any great degree.

Dr. Ashhurst speaks of cases which have been recorded by "Cline, Willard Parker, W. Bayard of Canada, Stephen Smith, and several other surgeons," although giving no detailed description of them.

In the case reported by Cline, a child of three years lived for a year after the accident, which consisted of a fracture of the atlas in such a manner that "the odontoid process of the axis had lost its support, and was constantly liable to fall back upon the spinal marrow."

In the well-known case described by Prof. Willard Parker, quoted in *Gross's System of Surgery*, vol. ii. p. 171, and in *Hamilton on Fractures*, p. 157, it may be found that the patient survived the accident for five months, at the end of which time he suddenly expired, from the odontoid process becoming displaced during some inadvertent movement of the head; this process having been completely broken off at the time of the accident, and its lower extremity turned backward towards the spinal cord, a result favoured by the destruction of the occipito-axoid ligament, which was the only ligament injured.

Of the cases reported by Drs. Bayard and Stephen Smith I have no details. Prof. Hamilton, however, has reported two cases of fracture of both atlas and axis, one of which died instantly, and the other survived for five days. In neither case was there sufficient displacement to produce pressure upon the spinal cord.

In spinal curvature we often meet conditions that have produced stretching of ligaments within and about the vertebral canal, shortening of the column, and changes in the course of, as well as pressure upon the cord; but these are wrought so slowly as to be compatible with life and a fair degree of activity. It has been said that dislocation and deformity are comparatively frequent, but that these as a result of injury are rare; and again that the transverse and restraining ligaments will undergo extensive stretching of their fibres without being ruptured.

And of the cord, Dr. Alex. Shaw, in *Holmes's Surgery*, vol. iv. p. 130, says that "Changes of the most extraordinary magnitude may be effected in the brain and cord by encroachments of various kinds, without the sacrifice of their functions, on condition that the intrusion is made slowly and gradually." But these things have more bearing upon the dorsal and lumbar portions of the cord than upon the cervical, although the same general law must have an influence upon its whole length. In a fracture so grave as this which I have reported, the ligamentous structures must have been torn at once; the changes in the size of the canals in large part instantaneously produced. The cervical medulla and its branches must have been severely compressed at the moment of the accident, and from that time until repair was complete, the nerve structures have been subjected to the influence of the changes and activity of circulation incident to the new bony formations. This case is more interesting, from the fact that bony union had taken place; this being said by Bell never to occur after fracture of the vertebra, but later, by Rokitansky, to be "rarely met with."

Why there should have been the apparent escape from disturbance of the functions of the phrenic nerve must be a question, but I am inclined to think that the compression of the cord at the point of the upper fracture was not accompanied by any change of its structure, either morbid or destructive, and that, as the lower fracture was not attended by any great degree of displacement of the bones, except in the perpendicular, the quiet respiration of a man lying inactive in bed, could be carried on by the muscles supplied with neurotic properties by the "external respiratory nerve of Bell," which arises from the fifth and sixth cervical nerves, and whose terminal points are in the serratus magnus muscle, and that the functions of the principal respiratory nerve (the phrenic) were for the time suspended, until the cord had acquired a tolerance of compression that would allow this important branch to resume by degrees its place as the nerve of active respiration. As a result of the fractures there was a shortening of the spinal column, and the portion of the cord containing the origin of the phrenic was drawn or fell below the natural position, so that the pressure was produced upon a part of it, if possible less vital, which took the same position relative to the bony case, which is normally held by the point of origin of the phrenic nerve. It is probable that the injuries to the fifth and sixth vertebra had no direct influence upon this nerve, being below its origin; and that the root of the nerve was within a section of the cord, bounded above by the fracture and compression, and below by the fracture alone, neither of which produced enough lesion of the structure of the cord to permanently disturb the functions of the nerve. For I believe that all authorities agree that fracture and displacement of the second cervical vertebra is followed by speedy death, excepting in cases in which the displacement, and consequent compression, are very slight.

It would seem almost inexplicable that in this case there should be such serious bony lesions, besides the changes incident to Nature's remarkable effort at repair, and the functions of the cord be so little disturbed, either primarily or secondarily; and that in so many cases of concussion of the spine, where no fracture, compression, or malposition can be found upon post-mortem examination, the effects of the injury should be so serious to the neurotic functions of the offshoots of the cord, and often to the life of the patient; were it not probable that there was no lesion of the cord or its membranes, but that they remained intact though greatly compressed; the hardy constitution of the patient enabling him to withstand the primary effects of the injury; and that during the two months which he lay in bed, the spinal cord acquired a power of accommodation to compression, which power can rarely be expected, anticipated, or promoted. It is unquestionably true that the portion of the cord within the ring of the atlas is the most vital point in the nervous system, and generally it may be said that in cases of injury of the vertebra or cord, the chances of fatal issue vary inversely with the distance of the point of injury from the brain, so that it is at least remarkable that this patient did not die four years ago from fracture of the spine, or, if not from that cause, from the fracture of the sphenoid bone, and the latter, which I believe to be unparalleled, might be reasonably doubted did I not hold the bone as a proof of its having occurred.

ART. XIV.—*Case of Hepatic Abscess.* By OLOF PAGE, M.D., of Valparaiso, Chili.

ON the 27th of June, 1875, a caulker, aged 30, applied for advice in regard to a tumour situated in the left hypochondrium. He gave the following history of himself: He said that he often took wine and spirits to excess, but never enough to cause any interruption in his work. For two or three months previous to his coming to me he said he had been engaged in repairing one of the floating-docks in this harbour, and that whilst thus occupied he very often got wet. In the latter part of April he had a mild attack of dysentery, which readily yielded to simple food and rest in bed for a week. On the 9th of May he left his home, feeling perfectly well, but having during the day indulged freely in liquor, he was on his return home seized with vomiting, pain below the ribs on the right side, and in the right shoulder. He had a chill, and fever afterwards. There was no diarrhœa. After the lapse of eight or ten days he began to have rigours and night-sweats. Seven or eight days later his wife noticed, for the first time, a small tumour to the left of the median line, accompanied, as she said, with pulsation. The tumour continuing to increase, a physician was then consulted, who told them that this proceeded from the liver. He prescribed leeches, to be followed by the application of

a blister. On the 9th of June, a cough, troublesome especially at night, declared itself, accompanied by dark, chocolate-red expectoration. Such is the history given to me, which I have tried to make as clear and short as possible.

I found the patient very thin, and of a pale straw complexion. The conjunctivæ had, I may say, a very slight yellow tinge. The tongue was perfectly clean, the pulse 90, and the temperature 100° F. The heart-sounds were clear, and the chest on both sides in front equally and normally resonant on percussion. On auscultation, no disease could be detected at the apices of the lungs.

Behind and over the lower two-thirds of the right lung there was dullness on percussion, and, on auscultation, diminished respiratory murmur and increased vocal resonance. On deep inspiration fine crepitation could be heard in different parts. Expectoration was pretty copious, and of a reddish-chocolate colour, as above mentioned.

The percussion limits of the anterior face of the right lung were normal. To the left of the mammary line dullness followed a slightly descending course, describing a curve beyond the left costal arches to the extent of two inches.

The right intercostal spaces were not quite so distinctly marked as the left, and measurement gave an inch more on the right than on the left side. No pain was felt when pressure was made on these intercostal spaces.

All pulsation ceased when the patient sat upright. The tumour felt hard, but elastic; smooth, slightly movable, and apparently deep seated. The skin, which was not at all discoloured, seemed perfectly adherent to the tissues beneath. There was an indistinct sensation of deep fluctuation, and pressure caused a great deal of pain.

Along its upper borders the tumour could be traced to within half an inch of the ensiform cartilage, and to within one inch of the right costal arch. Overlapping the median line one inch at the level of the umbilicus, it swept in a curve to within three inches of the left ilium, to follow an upward course along the margin of the left ribs. The percussion note between the tumour and the edge of the right lobe was perfectly clear, whereas the narrow space between the tumour and the left costal arch was not quite so resonant. I may add, that there was no enlargement of the spleen, no œdema, and the urine without albumen.

Diagnosis.—The history which the patient gave of his intemperate habits, the onset and course of the disease, combined with the physical signs, and the very characteristic expectoration, pointed to its having been a case of acute hepatitis running on to suppuration. The physical signs in the lung, and the presence of purulent and bloody expectoration, proved that the pus had made its way through the right lung; and the tumour in the left hypochondrium, that it had likewise made a way for itself through the abdominal walls. The resonance which existed between the tumour and the costal arches could be accounted for on the supposition that the abscess had become encysted.

The question now arose as to whether this pathological condition was due to the formation and existence of one very large abscess, pointing upwards and downwards, or to that of two, one in the posterior part of the right lobe and the other in the left lobe. The rule, I believe, is, that in non-pyæmic cases there is generally but one abscess. It is quite possible, in the present case, that a large abscess occupying the central por-

tion of the liver, should have pointed through the concave surface of that organ, working over to the left hypochondrium; then, that this having become encysted by a process of adhesive inflammation, the pus should have gone in the opposite direction through the lung. And by comparing dates, we find that cough first began some twelve or fourteen days after the appearance of the tumour. Taking the ground that two abscesses had formed in the beginning, we found that there was no enlargement at all of the right lobe, whereas the percussion dulness over the left lobe was very much increased, leading one to the belief that pus might have formed there from the very first. In connection with the different modes in which abscesses of the liver make their way out, I cannot but refer to a most interesting and instructive article on this subject in the *Revista Médica*, by Dr. A. Murillo, of Santiago. He reports, amongst others, the history of two cases of abscesses in the left lobe, bursting into the pericardium, causing almost instant death. In one of them the autopsy gave the following result: The pericardium greatly distended by a large quantity of sero-purulent liquid; false membrane, nearly a centimetre in thickness, covered the entire surface of the heart, principally the right auricle and ventricle, which were somewhat enlarged. The liver was enormously increased in size; and a large abscess, which had destroyed a great portion of the left lobe, perforated the diaphragm, forming adhesions with it, and extending into the pleural cavity; it occupied a space equal to that of the distended pericardium, opening at the same time into that important serous sac. The same abscess had likewise invaded the anterior and superior wall of the abdominal muscles in the vicinity of the ensiform cartilage. The liquid which it contained was of the consistence of syrup, and of a greenish-yellow colour. The gall-bladder was small, and full of yellow bile. No visible or important alteration in the lungs, stomach, or duodenum. The pancreas, in its upper part, firmly adherent to the liver, principally in the region occupied by the abscess. The peritoneum was in a normal condition.

A remarkable case was communicated to me by my friend Dr. von Dersauer, of a man upon whom he and Dr. Alluede Padin had operated. A large quantity of pus was removed through an aspirator, and then about 150 grammes of tincture of iodine injected. In about half an hour's time the patient was suddenly taken with symptoms of collapse, etc., and vomited a considerable amount of tincture of iodine. An emetic was given to clear his stomach, but not a drop of iodine appeared, nothing but a little clear liquid. I have no doubt that a perforation of the œsophagus must have taken place, and that the emetic must have had the effect, through muscular contraction, of closing the orifice. The lungs were perfectly healthy, and it is, moreover, scarcely to be imagined that such a quantity of iodine should go through the larynx without producing quickly fatal symptoms. The patient made a good recovery.

Treatment.—An operation having been proposed, to which a most willing consent was given, I went on the following day, the 28th of June, to my patient's house, which I found situated in one of the numerous quibradas of this place, which really mean open sewers, into which all sorts of filth are thrown. I must say that owing to the remote quarter of the town in which he lived, and other impediments, I was not able to visit him regularly, nor take proper thermometrical and other observations. Having placed the man in a convenient position, a small trocar was put into the most prominent part of the tumour, and on its withdrawal thick,

reddish-looking pus came up through the canula. Having removed this, a director was introduced, and, convinced that adhesions had taken place, and that the abscess was entirely separated from the liver, I made an incision nearly two inches in length. Enormous quantities of the same matter ran out. I passed a probe into the cavity about four inches, and in a direction to the right. Injections of a weak solution of carbolic acid and warm water were made, and a very large drainage tube left in the wound. A binder was put round the patient's body, and a little stimulant given on account of faintness. He was ordered the best food he could procure for himself, and for medicine quinia and sulphuric acid, and for the harassing cough to take morphia at night.

June 30th. Felt somewhat better, had not coughed so much, but no change in the expectoration. Discharge from the wound the same. Pulse 96. Temp. 100° Fahr.

July 1st. Sitting upon a chair. Discharge not quite so profuse. Expectoration less.

5th. The wound contracted a great deal, the tube could no longer be introduced. Cough and expectoration much less. Patient complained of night sweats. Right lung, no change.

8th. Further diminution in expectoration, still bloody.

30th. The patient walked into my consulting room, declaring that he felt perfectly well. Cough and expectoration had disappeared, and the lung had resumed its functions. The wound entirely closed.

May, 1876. He is at this present time alive, although in poor health, owing chiefly to irregular habits.

It will be seen, in the case under consideration, that the hepatitis was preceded by a mild attack of dysentery, and it is a well-established fact that abscess of the liver is sometimes due to ulceration of the bowels; nevertheless I do not think, from the history which we have given, that we should be warranted in holding such an opinion in regard to our patient. There were in the first place several days of perfect health, and in the second place acute hepatitis came on after a day's hard drinking. But that there can be no doubt as to the frequency of hepatic abscess after dysentery may be learned by referring again to Dr. Murillo's paper. He mentions, that Dr. E. Rodriguez, in a report on the causes of dysentery, states that out of 23 fatal cases of this disease there were 11 that had one or more abscesses of the liver, and remarks that this is a frightful proportion, and without doubt exceptional. Dr. S. Litelier made 47 post-mortems of dysentery cases, and found 10 with abscess in the liver. Dr. Murillo attributes the frequency of hepatic affections principally to the effects of climate, and the abuse of liquor, and a certain proportion as due to dysentery. Although the extremes of heat and cold are not so marked as, for example, in the United States, the difference, nevertheless, between the day and night temperature here is far greater. A man who has been drinking all day, and remains exposed to the night air, may be almost sure of getting acute hepatitis. But that dysentery, unless complicated with the habit of drinking to excess, should in so large a percentage be followed by abscess of the liver, I cannot from my own

experience admit. I have during the last eight years treated more cases of dysentery than any other disease, but I have never seen a single case followed by abscess of the liver, unless it were in a person addicted to drink. I have never seen or heard of a case of dysentery in children followed by hepatic abscess. Dr. Murillo has seen but one case of hepatic abscess in women, but he does not state that it came on after dysentery. And yet this latter complaint as frequently attacks women as it does men. I conclude, therefore, that, whilst no doubt can be entertained as to the noxious influence of the combined effects of climate and drink upon the functions of the liver, dysentery cannot be held accountable for hepatic complications, unless occurring in subjects given to alcoholic excesses.

ART. XV.—*Report of a Case of Gunshot Wound of the Right Knee-Joint and Right Hand.* By GEORGE M. KOBER, M.D., Acting Assistant Surgeon U. S. Army.

SERGEANT EDWARD McM., æt. 24 years, left this post Dec. 5th, 1874, for the purpose of hunting. It appears he had hidden his gun in the sagebrush the day previous, and, leading his horse with the left hand, he stooped to pick up the piece with the right hand, taking hold of the gun near the extremity of the barrel, the muzzle directed towards his body. Whilst doing so, the piece accidentally discharged its contents (a load of duck shot), shattered the barrel, and wounded the sergeant, whose horse returned to the camp; and one of the men, fearing that some accident had befallen its rider, started in the direction from whence the horse came, and, finding the man disabled, returned to procure assistance. With men and a stretcher I started for the scene of the accident, and found the sergeant wounded in the right-knee and hand. The hemorrhage and shock were comparatively slight, and the patient was at once removed to the hospital.

After removal of the clothing, the wound of the knee was carefully examined, and it was found that the load had entered near the tuberosity of the external condyle of the right femur, passed obliquely upwards and inwards, and escaped near the lower part of the semitendinosus muscle. Small fragments of the bone were found in the wound, and, together with pieces of wadding, clothing, and dirt, removed.

From the fearful proximity of the gun when exploded, the charge had made a similar wound to that produced by a bullet, and owing, no doubt, to the flexed position of the joint, and the oblique direction of the load, the wound was more superficial in character, involving, however, the tuberosity of the external condyle, the lower part of the biceps, and the internal hamstring, which was severed. Capillary hemorrhage was controlled by injections of cold water through the wound, which also served to remove loose remaining foreign particles. A lotion composed of aquæ font. Oij; alcohol, ʒvj; acid. carbol. cryst. ʒj, was faithfully applied every twenty minutes, and an attempt made, in accordance with

the patient's strong wishes, to treat the case on the expectant plan. I now directed my attention to the wounded hand, and found that the soft parts of the palmar surface, particularly the flexor brevis and abductor minimi digiti muscles, were extensively lacerated, and the first phalanx of the ring finger totally deprived of its soft parts. After giving the patient two ounces of whiskey, I amputated the finger (by flap operation) through the middle of the second phalanx. The lacerated soft parts of the hand were replaced and secured by sutures and adhesive strips. The above lotion was also applied to the wounded hand, and $\frac{1}{4}$ grain of morph. sulph. administered. The following mixture was ordered to be repeated every three hours, while the patient continued awake:—

R. Morphiae acet. grs. ij; spt. æth. nitr. ℥ij; sacchari albi, ℥ij; aquæ camph. f℥iiss; liq. ammon. acet. f℥iv.—M. ft. mist

A tourniquet was applied loosely over the femoral artery, and instructions given in case of hemorrhage.

December 6, 7 A. M. Pulse 100. Has slept some, feels pretty well, experiences no discomfort in the wounded members; anodyne and local applications to be continued. *9 P. M.* Pulse 116; skin covered with gentle perspiration; has slept several hours during the day.

7th, 7 A. M. Pulse 103; has slept more or less during the night; expresses himself comfortable. The wounds were syringed with warm carbolated water (Oij-℥j), and a pledget of lint saturated with carbolated glycerine (℥ij-℥j) was introduced into the opening of the wound near the external condyle. The lotion and anodyne mixture to be continued, and ℥iv of sol. magn. citr. repeated every four hours until an evacuation of the bowels is procured. *9 P. M.* Pulse 101; feels comfortable; perspires gently. Anodyne mixture suspended.

8th, 7 A. M. Pulse 95; slept but little on account of flatulency; bowels moved this morning; feels comfortable, but weak. Wound of the knee discharges freely shreds of necrosed tissue—syringed out with warm carbolated water. The hand looks favourable, healthy granulations are seen in the lacerated tissues, and the stump of the finger promises to heal by first intention. Local and general treatment continued. *9 P. M.* Pulse 105; anodyne mixture every two hours until sleep is induced.

9th, 7 A. M. Pulse 93. Has slept comfortably; a slight discharge of laudable pus from the orifice of the knee wound is perceived. Wound syringed out with warm carbolated water, and carbolated pledget of lint introduced. Sutures from the stump of finger and hand removed, and dressed with carbolated cosmoline; warm carbolated-water dressings to be applied every hour to the knee. Valentine's meat juice, milk diet, and five grains citrate of iron and quinia three times a day. *9 P. M.* Pulse 107. Anodyne mixture every two hours until asleep.

10th, 7 A. M. Pulse 92 Has slept well. Discharge from the knee wound moderate. *9 P. M.* Pulse 106. Anodyne mixture every two hours.

11th, 7 A. M. Pulse 92; feels pretty well; appetite good; discharge moderate. Treatment continued, and a dose of magnesia and rhubarb given. *9 P. M.* Has had a passage; complains of no pain. Anodyne mixture, if necessary, to procure sleep, and this to be given every night if required.

12th, 7 A. M. Pulse 90; has slept well. Discharge moderate. Local and general treatment continued. At noon, complains of pain and tenderness in the knee; swelling, which has been moderate heretofore, more

marked. A dose of the anodyne mixture and warm local applications repeated every fifteen minutes produced ease and comfort. 9 P. M. Pulse 105. No pain.

13th, 7 A. M. Pulse 94. Has had a comfortable night's rest. Appetite good, partakes freely of meat juice, chicken soup, and milk. Discharge moderate. Healthy granulations about the orifice of the wound. Hand looks well. General and local treatment continued, and two ounces of sherry wine three times a day.

14th, 7 A. M. Pulse 89; has slept well, and expresses himself comfortable; appetite good; discharge considerable. Local and general treatment continued. Bowels moved by an enema of warm water.

15th, 7 A. M. Pulse 96. Slept pretty well. Discharge more plentiful than is compatible with a normal process. Local treatment continued, and five grains of quiniæ sulph. added to each dose of the citrate of iron and quinia. 9 P. M. Pulse 105. Anodyne mixture if required.

16th, 7 A. M. Pulse 90. Has slept well; feels comfortable. Treatment continued, except a substitution of whiskey for the wine, as the latter appears to disagree with the milk diet.

17th, 7 A. M. Pulse 86. Has rested well. Discharge from wound of the knee considerable. Treatment continued. Bowels moved by an enema of warm water. 9 P. M. Pulse 90. Bowels moved twice since the enema was given.

18th, 7 A. M. Pulse 86; has slept but little without the anodyne mixture. Wounds dressed as usual. Treatment continued. In the afternoon, feels feverish; pulse 108. Diaphoretic mixture given.

19th. At 7 A. M. pulse 84; slept but little; wound of the knee discharges a large amount of pus. Suppuration of the joint suspected; swelling and darting pains marked. Carbolated glycerine pledget and warm applications still continued.

20th, 7 A. M. Pulse 92; slept very well; discharge copious; wounds dressed as usual; treatment continued. At 9 P. M. pulse 108.

21st, 7 A. M. Pulse 90; slept well; discharge copious; stump of the finger entirely well; hand requires but simple cosmoline dressing; treatment continued; more swelling of the joint and neighbouring tissue. Apprehensions as to a successful issue of the case under the expectant treatment entertained. It is quite certain that suppuration of the joint has taken place, and possibly inflammation of the connective tissue in the vicinity particularly of the fascia lata. The nature of the case explained to the patient, and his chances for life without operative interference clearly pointed out. Amputation proposed as his only good chance for life, but the patient objected, and seemed quite willing to embrace the worst chances. 9 P. M., pulse 104.

22d, 7 A. M. Pulse 94; slept more or less during the night; discharge from the knee wound copious and fetid; treatment continued. At 9 P. M. pulse 108.

23d, 7 A. M. Pulse 95; slept well; wound discharges fetid pus; treatment continued. 9 P. M., pulse 104.

24th, 7 A. M. Pulse 110; has had a chill during the night, followed by fever and profuse perspiration; discharge copious and offensive; local and general treatment continued; increase the quinia to 10 grains in addition to the citrate of iron and quinia, and the whiskey to 8 ounces per day. There is marked tenderness over the patella, and fluctuation along the outer aspect of the thigh. Injected warm carbolated water into the

exit wound, for the purpose of removing shreds of necrosed connective tissue, and followed it with an injection of carbolated glycerine (3ij-3j), one fluidrachm was injected at the time. The discharge makes its escape through the exit wound. An incision was made for the escape of pus on the outer aspect of the thigh. 9 P. M., pulse 109.

25th, 7 A. M. Pulse 102; slept pretty well; has had a night-sweat. Discharge from the wound copious and offensive; appetite very good. Local treatment continued; acid. sulph. arom. gtt. xv, with 10 grains of quinia three times a day; opium gr. j at bedtime. 9 P. M., pulse 115.

26th, 7 A. M. Pulse 110; discharge the same in quantity and quality; treatment continued; hectic flush well marked; appetite good; in spite of the unfavourable change patient appears quite cheerful. 9 P. M., pulse 112; tr. opii gtt. xxv at bedtime.

27th, 7 A. M. Pulse 96; slept pretty well; perspired some; discharge still copious and offensive; treatment continued. 9 P. M., pulse 108; has had a good appetite, and feels comfortable; tr. opii gtt. xxv at bedtime, to be repeated if necessary.

28th, 7 A. M. Pulse 95; slept pretty well; discharge unchanged in character and amount; treatment continued. 9 P. M. pulse 112.

Perhaps it will be too tedious to follow up the details of the case as exhibited by the daily record; suffice it, then, to say that the case, in spite of all treatment, assumed the form of chronic suppurative inflammation of the knee-joint, complicated at various times with the formation of abscesses in close proximity to and above the joint. February 22d an examination while the patient was under the influence of ether satisfied me that no caries of the bone existed. The entrance wound had been closed by granulations, and in place of the exit wound existed a fistulous opening, which appeared to communicate with the joint, the popliteal space, and higher up. It seemed as if all the connective tissue in the vicinity had been the prey of inflammation, and was now presenting a sluggish granulation tissue, and that this low form of inflammation had a tendency to spread upwards beyond the middle of the thigh. The enlarged white and bloodless appearance of the joint, the tendency to pointing in several places, the fatty and cheesy character of the discharges, indicated to me that there no longer existed an active inflammation, but that I had to deal with a low form of inflammation incapable of generating normal tissue. The cheesy odour of the discharge, which was seen to consist, under the microscope, of pus cells, irregular nucleoli, and an ill-defined detritus, fragments of cells and disorganized connective tissue, and indistinct finely granular and fatty masses, reminded me involuntarily of the microscopical character of tubercle. I became convinced that in order to benefit the patient without resorting to an operation (to which he still objected), I must resort to other means than those heretofore applied. At this time my eye met the article of Mr. Richard Barwell on the treatment of chronic strumous synovitis, more especially of the knee (vide *American Journal of Medical Sciences* for January, 1875), and I was greatly pleased with the treatment suggested by him. I determined to use a solution of iodine as directed by him, viz., tr. of iodine, 3ss; water, 3vijss, and I added 16 drops of pure carbolic acid. On account of the fistulous opening I employed a glass penis syringe, instead of a hypodermic syringe, and injected one drachm of the solution once a day, and by manipulation endeavoured to bring the injection in contact with the tissues involved. Scarcely any pain followed the use of these injections, and after their faithful employ-

ment for a month I believed that I was doomed to disappointment, at least I could perceive none of the brilliant effects I had pictured to me. Upon reflection, however, I considered that my failure had its origin first in the strength of the solution, and second in the formation of abscesses in the cellular tissue far above the point of application. I therefore increased the strength of the solution, using tr. iodine, \mathfrak{Zj} ; glycerinæ, \mathfrak{Zvij} ; acid. carbol. cryst. gtt. xvj, and, finding that the object was still unattained, cautiously and gradually increased the strength until it reached the following proportion: R. Tr. iodinii, \mathfrak{Zvj} ; glycerinæ pur. \mathfrak{Zij} ; acid. carb. cryst. gtt. xvj.—M. ft. sol. One drachm of this strong solution was injected at a time into the fistulous opening at intervals of three days, and it was not until after three weeks' employment that the smarting and pain it produced satisfied me that the desired effect would be obtained. The joint gradually assumed a healthy appearance in size and colour, and healthy granulations filled up the undermined tissue in the popliteal space. The fistulous opening was allowed gradually to close.

After this I had to contend with the formation of two abscesses in the cellular tissue, midway of the thigh, and upon its outer aspect. These were opened, and after the evacuation of the pus two drachms of the solution were injected. June 28th, the last abscess which had formed in the gluteal region spontaneously opened, and after the evacuation of the pus two drachms of the solution were injected. This seemed to excite the sluggish tissue to normal cell formation, and the last of the abscesses finally closed.

The drain to the system by excessive suppuration, the absorption of disintegrated products of inflammation, the consequent hectic fever, had left their impress on the patient's system and vital powers, and at times he seemed to be on the very brink of death. Liberal doses of quinia and whiskey, and the patient's ability to partake freely of nutritious food, kept him afloat until the iodine gradually but surely changed the character of the disease. I am perfectly satisfied that nothing but the iodine of the strength which I employed brought about the favourable change, and therefore regard it a most excellent remedy, not only in cases in which Mr. Barwell employed it, but also in all cases where the surgeon is obliged to treat a case of gunshot or other wound involving the joint, which has assumed the character of chronic inflammation, on the expectant plan, instead of resorting to the knife. The patient has recovered with an ankylosed joint, and after performing for several months the duties of an acting commissary sergeant, was discharged April 2d, 1876, from the service.

CAMP McDERMIT, NEVADA, May 13, 1876.

ART. XVI.—*Intussusception; Cure by Inflation.* Read before the Medical Society of Yokohama, Japan, June 17, 1876. By STUART ELDRIDGE, M.D., Surgeon Yokohama General Hospital.

JUNE 11th, at 6 P. M., I was called to see J. G., aged 17 months, in general remarkably strong and healthy. The child had been ailing for several days, with constipation and slight fever at night, seemed also to

have frequent attacks of colic. On the evening of June 10th, the mother administered a dessertspoonful of ol. ricini, which brought away a small amount of consistent feces after intense tenesmus and severe pain. During the night of 10th, and all day of 11th, the child had suffered from very severe attacks of abdominal pain, which it seemed to refer to region of transverse colon. Repeated attacks of nausea and vomiting of mucus and biliary matter occurred during 11th, the vomiting taking place irrespective of ingesta. When seen the pulse was 140, wiry and small; temperature 103.5° ; skin hot and dry; tongue thickly coated; abdomen largely swollen, hard, tympanitic, and extremely tender. A lump, apparently of the size of a small egg, could be indistinctly felt about region of right flexure of colon. Paroxysms of intense pain occurred at intervals of about fifteen minutes, during which the child placed its hands upon the upper portion of the abdomen with cries of itai! itai! (pain! pain!). Nausea constant, but ejecta, if any, again swallowed. The mother had an hour previous to my visit administered an ordinary enema without effect. I immediately gave an enema of soap and water, through a catheter inserted five inches in the anus; about half a pint was all that could be given, and this returned immediately, bringing with it about three drachms of consistent feces. Suspecting that the case was one of intussusception, I then thoroughly inflated the bowel by the reversed action of Codman & Shurtleff's aspirator, the air being transmitted through a No. 12 gum catheter inserted ten inches within the anus. The operation of inflation seemed very painful. I inflated until the sense of resistance and swelling of the abdomen became considerable, when, on withdrawing the tube a rush of air followed, and I was pleased to find that the abdomen was softer, and less swollen than before the operation. The tumour in right upper portion of abdomen was also, I thought, a trifle smaller. I repeated inflation at once, but with no increased effect. Prescribed tr. opii, $\mathfrak{m}\mathfrak{i}\mathfrak{j}$, at intervals of three hours during night, together with a teaspoonful of ext. carnis. The child was more easy during the night of the 11th than it had been during the day; but early on the morning of the 12th, began to have frequent small dejections of pure blood, with once or twice a slight admixture of mucus. At 8 A. M. on the morning of 12th I found the pulse 145; temperature 104° ; skin hot and dry; tympanites and tenderness of abdomen even greater than at first visit. Constant nausea, with stercoraceous odour of breath. I at once inflated, compressing the buttocks strongly about the pipe, which was passed 12 inches within the anus. Resistance to inflation was more strongly marked than on the day before, and occurred at an earlier stage of the operation, while in spite of strong compression of external parts about the pipe most of the air injected seemed to escape as fast as thrown in. I worked the syringe with great rapidity for about thirty strokes, when the sense of resistance suddenly diminished, and the escape of air by the side of the pipe ceased. I continued inflation until the air began again to escape from the anus, when I withdrew the instrument; an enormous escape of air took place, mixed with intestinal gases, as perceptible by the odour, and on examination of abdomen I found it soft, collapsed, and the induration about right flexure of colon no longer perceptible. Nausea and vomiting immediately ceased, and did not recur. Prescribed: Tr. opii camphoratæ, $\mathfrak{z}\mathfrak{i}\mathfrak{j}\mathfrak{s}\mathfrak{s}$; bismuthi subnit. $\mathfrak{z}\mathfrak{j}$; aquæ camphoræ, $\mathfrak{z}\mathfrak{s}\mathfrak{s}$; mucilaginis ad $\mathfrak{z}\mathfrak{i}\mathfrak{j}$; coch. parv. \mathfrak{j} altern. hor. Beef extract to be continued, together with an occasional spoonful of iced milk. At 2 P. M. the child had a free, healthy stool, after which no

trouble appeared to exist save a slight tenderness over transverse colon, lasting for twenty-four hours, together with some general muscular weakness. The child has continued well in every respect till to-day, June 17th. Believing, as I do, that inflation holds out the best prospect of cure in cases of intussusception, it seems to me that certain data should be in the possession of the profession in order that its employment may be intelligently regulated. We should know the limit of endurance of pressure from within, belonging to the average healthy intestine at various ages within the usual time of the occurrence of the disease.¹ Possessed of this information the surgeon acting early, before the probable occurrence of softening or gangrene, would be able to push his treatment to the utmost limit of safety, guiding himself by a manometer attached to his injecting apparatus.

ART. XVII.—*A Case of Traumatic Aneurism of Right Common Carotid; Operation of opening the Sac; Internal Jugular Vein being wounded is also ligated; Recovery.* By GEO. E. FROTHINGHAM, M.D., Prof. of Ophthalmology, University of Michigan.

On the night of August 16, 1875, H. O., aged twenty-three, was injured by the explosion of some powder kept in a store, which he and others were attempting to save from burning. At the time of the explosion he was standing in front of the show window, and together with some of his companions was thrown several feet toward the centre of the street, and was for a moment rendered almost insensible. I was called to see the patient about an hour after the injury, and found him suffering great depression, fainting upon the least attempt at a sitting posture. His face was covered with scratches caused by pieces of glass and other solid particles thrown in every direction by the exploding powder. Among his injuries were two penetrating wounds of the right side of the neck, one near the antero-inferior angle of the sub-occipital triangle, and the other just at the apex of the inferior carotid triangle.

The openings in the integument had the appearance of having been cut by some particles of glass, and were between one and two lines in length. The external hemorrhage had ceased soon after the injury, but a diffuse aneurism had been formed, extending from the angle of the jaw to the clavicle, and pressing the trachea slightly to the left and interfering with deglutition. An examination with a probe showed that the fragment that had entered at the upper opening had glanced upward and probably lodged in the tissue behind the external ear, though it could not then be felt. The probe could not be made to follow the lower wound.

The voice of the patient was reduced to a mere whisper.

Rest in the recumbent position was enjoined; the right eye, which had

¹ I am not aware that any experiments of the kind mentioned have as yet been made, at least I can find no reference to them in any work to which I have access. Opportunities for such investigation but rarely occur with us in the East, and would require in order to be worth anything the examination of a large number of bodies.

also been wounded, was attended to; and the symptoms carefully watched, the attendant being instructed to call me immediately should the tumour in the neck enlarge or the difficulty of swallowing increase.

By morning deglutition could be performed with less difficulty, and the tumefaction of the neck showed no tendency to increase. I was thus encouraged to pursue the expectant plan, hoping that the main artery was not wounded, but that the effused blood had been poured out from a wound of some of its branches, and a spontaneous cure might be possible.

By the fourth day, however, the bruit became more distinct, and indicated very clearly that the artery wounded was the common carotid.

From this time until August 31st, the tumour became more circumscribed, projecting more just over the point where the artery was wounded, and leaving a slight depression between it and the clavicle.

During this interval, the weather had been comfortable, and the condition of the patient somewhat improved, he being able to sit up for a few moments without the marked symptoms of syncope that at first prevented this posture. The weather now became warmer, and by September 3d, the tumour showed a decided increase in size, and kept steadily enlarging.

By the 6th it became painful, and on the 8th it was extremely painful, the patient requiring large doses of morphia to procure rest. The tumour now extended from the angle of the jaw to the clavicle, pressing the trachea well over to the left, and projecting full two inches beyond the ordinary level of the neck. A slight depression or groove existed between the tumour and the clavicle.

The symptoms being thus urgent, I decided to delay no longer, but operated Sept. 9th, twenty-three days after the injury. The operation was commenced at 3 P. M. The patient having been put under the influence of ether, the sternal and inner half of the clavicular attachment of the sterno-cleido-mastoid muscle were divided together with skin and fascia covering it. An incision was next made through the skin and deep fascia at the lower portion of the neck just at the inner border of the sterno-mastoid, and a trusty assistant was directed to compress with his thumb the lower portion of the common carotid. In exercising the necessary pressure the thumb broke through the thinned wall of the sac, but was brought immediately upon the artery, compressing completely its lower portion, and with the effect to very greatly lessen the pulsation in the tumour. A narrow incision was now made through the most prominent portion of the tumour, the forefinger of the left hand plunged in, and the wound in the artery felt for. After a little search this was found, and compression exercised so as to completely stop the pulsation in the tumour. The sac was then laid freely open, the clots turned out, the cavity sponged, and the wound was now found to be in the common carotid just below the lower border of the omo-hyoid muscle. The muscle was drawn upward, and, upon examining the posterior wall of the sac, the tissues of which were much altered in appearance, a considerable vein was seen to cross the artery at this point and enter the internal jugular, which, as is usual in such cases, almost completely overlapped the artery.

In attempting to draw it to one side, its walls, probably softened by inflammatory action, gave way, and a fearful gush of venous blood was the result. This was instantaneously checked and controlled by pressure. A ligature was now thrown about the artery above and one below the wound. The internal jugular was next ligated above and below the point of injury, and the vein entering it here had also to be ligated, making five

ligatures in all. The wound was well cleansed, its edges brought together by sutures, the ligatures brought out near the inferior angle, a compress was applied, and the patient placed in bed. 6 P. M. The patient has completely rallied from the effect of the anæsthetic, is resting nicely, and free from pain.

The next morning at 6 A. M. found the patient feeling comfortable. Pulse 100. He had rested well through the night, but his mind was slightly confused, though there was no headache nor any marked cerebral disturbance. He was able to take food more freely than for several days prior to the operation.

From September 10th to 14th the patient felt very comfortable; the wound looked healthy; pulse varied from 88 to 100; temperature of body from 100° to $101\frac{1}{2}^{\circ}$. On the 14th the body temperature rose to 104° in the evening; wound doing well.

Sept. 15, 8 A. M. Pulse 100, temperature $100\frac{1}{2}^{\circ}$, feeling comfortable. 5 P. M. Pulse 110, temp. 104° , feeling feverish and thirsty.

16th. Same symptoms repeated at about the same hours.

17th. From 1 A. M. to $3\frac{1}{2}$ P. M. administered 16 grs. of quinia, in four doses of 4 grs. each. 10 P. M. Temp. $99\frac{3}{4}^{\circ}$, wound doing well. After this the temperature never exceeded 100° , the pulse ranging from 76 to 88.

21st. All the ligatures came away except the lower one surrounding the internal jugular vein. This ligature did not come away until October 8th, 29 days after the operation. The recovery was now completed in a short time. The wound in a few days completely closed. In a few weeks the strength was recovered, and the patient is now perfectly well, though the voice has remained permanently impaired.

The only full notes of a similar operation that I have seen are recorded at page 831 of *Syme's Surgery*. In his operation he was greatly embarrassed for room to manipulate in the wound after opening the sac, and was obliged to divide the sternal attachment of the sterno-mastoid muscle while one hand was engaged in compressing the artery. His experience led me to divide this muscle with the superjacent structures as a preliminary step to the operation.

From this measure, which added nothing to the danger of the operation, I derived great advantage, having plenty of room to manipulate in the wound, without which I could hardly have managed so easily the double source of hemorrhage.

Syme declared this case of his to have been the most arduous that ever occurred in the course of his surgical experience. In reporting his case he says:—

"Indeed, even now I cannot, without a shudder, reflect on my position, when the slightest displacement of one hand must have instantaneously caused a fatal hemorrhage from the carotid artery, and a wrong direction of the needle by the other, to the slightest extent, would have given issue to an irrepressible stream from the jugular vein."

By the method of operating which I adopted, and which may be employed when the wound in the vessel is not too low down, the compression of the artery may be left to a skilled assistant, leaving both hands of the operator free to manage the hemorrhage from a wound of the jugular vein

should it occur. And in our day the ligation of that vein is not regarded by the surgeon with such serious apprehension as it was at the time when Syme made his operation.

In this operation I am indebted for valuable assistance to my colleagues Prof. Donald Maclean and Prof. H. S. Cheever, and also to Dr. John Kapp, of Ann Arbor.

ART. XVIII.—*Case of Embolism and Thrombosis of the Pulmonary Arteries, which was rapidly fatal.* By ISAAC G. PORTER, M.D., of New London, Conn.

AMONG the internal causes of sudden death, we may enumerate—1st. The bursting of aneurisms, the result of atheromatous deposits in the large bloodvessels near the heart. 2d. The rupture of the heart itself, mainly through the influence of fatty degeneration. 3d. Valvular diseases of the same organ; although, of late, this cause is regarded as really less operative than was formerly supposed. 4th. In an interesting article in the last number of this Journal "Spasm of the heart" occupies a place in the same grave category. 5th. The "heart-clot" of Meigs, in puerperal women, or cardiac thrombosis. 6th. Extravasation and effusion of blood at the base of the brain, from disease and rupture of the arteries; also, large hemorrhages into the substance of the brain from the same cause, or from embolism, constituting apoplexy. 7th. Another similar factor, unknown and unsuspected until elucidated by Virchow, his co-peers and successors, is exemplified in the case now to be detailed, viz., embolism and thrombosis of the pulmonary arteries. As remarked by Aitken, "results are now explained on simple mechanical principles which hitherto have been obscure. Formerly many of the cases thus explicable would have been recorded as cases of 'sudden death,' or as 'sudden retrocession of gout or rheumatism,' or 'gout in the stomach,' or 'palsy of the heart.'"

April 30, 1876. Called to H. P. H., of this city, merchant, sixty-one years of age, weighing 180 pounds; in appearance robust and somewhat plethoric, with capacious and fertile brain. His pulse for a man of his size was always small and weak, yet his health was ordinarily fair, having never had rheumatism or any cachectic disease, and, by ordinary rules, entitled to longevity by right of inheritance. Still he was always, voluntarily, overworked, unceasingly active seven days in the week, maintaining, for more than forty years, a Sabbath-school in a destitute region five miles distant, besides superintending the largest similar institution in town. For two weeks before his death he complained of unusual weakness, and had a slight bronchial cough. Still he attended to business,

and rode out the day before his death, driving the horses himself. He passed a restless night, but arose as usual, and among other things exerted himself in visiting the observatory at the top of the house. But he returned almost immediately, became faint and breathless, and barely reached the lower floor, when he almost fell into the arms of his family. I reached him very soon (at 7.45 A. M.), and found him cold and in profuse perspiration; countenance pale and ghastly; pulse very rapid, irregular, and scarcely perceptible. He was very restless, though without true pain, and complained earnestly of being faint and as having no breath, although at the time filling his lungs completely at every inspiration. The difficulty was not increased by the horizontal position, and yet he preferred to sit up, supported by friends. Stimulants conferred momentary relief, and sinapisms and external warmth were freely used, but in about half an hour his head fell on his breast, and he was gone, remaining conscious to the last.

A *post-mortem* examination was made at 4 P. M. by A. W. Nelson, M.D., assisted by other physicians of this city; but as the heart alone was examined, and there was found no very unusual amount of clot in the right side of the heart, the examination was not carried to the lungs, although we were disappointed in finding so little to explain the peculiar mode of death. At the suggestion of a son of the deceased, a student at the Harvard Medical School, the assistance of R. H. Fitz, M.D., Assistant Professor of Pathological Anatomy at that institution, was cheerfully sought, and I now have the pleasure of presenting the following letter from one so accomplished in his department as Professor Fitz, to whom the heart and lungs were forwarded, and which reveals the true cause of death, as well as the benefits of sometimes minutely examining organs which were not suspected of being mainly in fault.

"The examination of the organs sent me has proven satisfactory as to the cause of death, which was embolism and thrombosis of the pulmonary arteries.

"The left ventricle of the heart was moderately dilated and hypertrophied—this condition being evidently due to chronic changes of the aortic orifice resulting in insufficiency. The septum between two of the crescents had almost wholly disappeared, the corpora aurantii of these were approximated, and the leaflets somewhat thickened and contracted. The appearance was thus presented as if but two semilunar valves of unequal size existed at the aortic opening.

"This condition gives the most probable explanation of the constant small and feeble pulse, as the appearance of the wall of the heart was not suggestive of any special degree of fatty degeneration.

"In one of the secondary branches of the pulmonary artery of the left lung, an adherent and slightly decolourized clot was found, which had probably been in position some days.

"From this a more recent coagulation extended towards the common pulmonary arteries of both lungs, and was continued into the main artery of the right lung, filling it and the primary auricles.

"The arborescent clot was thus formed—its ends rounded and pointed passing from one and a half inch to one inch into the primary branches. Beyond its ends the blood was still fluid.

"The *besoin de respirer* and the ability to inflate the lungs are thus quite compatible, the bronchiæ not being obstructed, but the blood not capable of aëration. Death is thus immediately produced by a lack of oxygenated arterial blood in the nervous centres, notably in the medulla oblongata.

"A certain degree of bronchitis existed, of no importance in respect to the sudden death. The heart did not indicate the seat of the original embolism, which may have been in the right side of the heart or in any of the body veins."

The closing sentence of the above letter leads me to say that, some eighteen months before his death, the patient made an overland journey to California, and, as he thought, through long and persistent confinement in the cars, his left leg and foot became very painful and swollen, so much so that for some time after his arrival, he was disabled for business, and was under the care of a surgeon, and by him kept very quiet in a horizontal position. The pain left him after a time, but the limb remained swollen quite to the time of his death, though it did not particularly incommode his walking.

In this connection the writer would add that his patient was careful of health and life as a duty, and in pursuance of the same was in the habit of using daily the "health-lift." About two weeks before his death, while exercising among the small hundreds, and he had nearly reached his accustomed allotment—without his knowledge and purely as an accident—the "slide," which, by its action, increases the weight to be lifted, had been moved. Feeling *bound* to do again what he had often done before, he exerted himself greatly and quite to his injury. The week after, he called at my office, stating the fact, and that he had felt unwell ever since. It may have been a vain fear; but on the other hand, when it is asserted of the machine "that the lifting effort is made entirely through the action of the muscles of the lower extremities in straightening and bending the knees," may we not inquire whether some old formation that had hitherto laid dormant, may not have been disturbed by the powerful action of the muscles on the crural veins, breaking down and detaching venous thrombi? That thrombosis, occurring in the peripheral veins, not unfrequently leads to embolism of the pulmonary arteries is shown by the following statement of Niemeyer:—

"Within the last few years I have seen two cases, in which death occurred in the course of a few hours, with all the signs of intense dyspnoea and collapse, and in which it was found, *post-mortem*, that a large thrombus had been detached from the femoral vein, had passed into the circulation, and by obstruction of the main branch of the pulmonary artery, had occasioned this peculiar kind of suffocation." (Vol. i. p. 412.)

In the case which has received our chief attention, the persistent œdema of the limb would imply continued, but diminished obstruction of the vein or veins of the extremity. Aitken speaks of cases "where the coagulum adheres only to one wall, with the effect of narrowing the passage," etc.

The testimony of Prof. Fitz will be remembered, viz, "the heart did not indicate the seat of the original embolism." The point has probably never been settled how long a venous obstruction may remain quiescent, and yet ultimately break up and be detached to enter the circulation. The following caution, however, will be harmless, even though unjustified by the premises: The use of the "health-lift" is often attended by great advantages; but if our speculations are founded in truth, we can scarcely recommend the instrument in cases where œdema remains after the existence of what used to be called phlebitis of the lower extremities.

(ARTICLE XIX.)

A CENTURY OF AMERICAN MEDICINE. 1776—1876.

IV.

LITERATURE AND INSTITUTIONS.

By JOHN S. BILLINGS, M.D., Assistant Surgeon U. S. Army.

“Wherefore, by their fruits ye shall know them.”

BESIDES his duties to his patients, the physician is under certain obligations to contribute, by way of interest, his quota to the common stock of medical knowledge from which he has drawn so freely. The skilful diagnosis, judicious medication, or bold and successful operation, if not properly recorded, benefit the individual only, not being available for those comparisons and higher generalizations which alone can make medicine a science. By the manner in which this duty, of preserving and transmitting the results of its labour and experience, has been performed, the medical profession of a country, as well as the individual physician, must to a great degree be judged, and the question now presented is, to what extent and in what manner have the physicians in the United States fulfilled this part of their professional obligations during the century just passed.

In the retrospective reviews, historical sketches, and centennial addresses which have, during the past year, been devoted to American medicine, our most important contributions to the healing art have been duly pointed out, and for the most part sufficiently eulogized. That the United States has a medical literature, has been cumulatively demonstrated, even to the extent of raising a suspicion of the existence of a doubt upon this point; and that this literature contains many valuable original contributions to the art, if not to the science, of medicine may be considered as unanimously affirmed and admitted.

If the defects of which all are more or less aware, have been but slightly referred to, it is because the purpose of the writers has been rather eulogistic than critical. In this final article of the present series, the object is not to select for praise the best of the work, nor the reverse, but to endeavour to give an idea of the quantity and value of the whole of it. So far as individual writers are concerned, an attempt will be made to supplement the information given in previous papers, but these have been so complete as regards that which is worthy of notice, that little need be said of single books and articles.

We will first endeavour to give some account of the quantity of medical literature produced in the United States during the last hundred years; making use for the purpose of some statistics obtained from a nearly complete list of the medical books published in this country from 1776 to the present time, and from which it may be considered certain that no important work has been omitted.

In these statistics we do not include works intended for the non-medi-

cal public, those relating to "ics" or "pathies," nor the great mass of what are called pamphlets in the technical sense of the word, that is, books of less than one hundred pages. The great majority of these pamphlets are either reprints from periodicals, addresses inaugural or valedictory, a few of which contain historical data of interest, or controversial and personal disquisitions which are best forgotten. While it is true that there is no necessary connection between the size of a work and its practical or scientific value, it will be found that with a very few exceptions, which have been pointed out in the preceding articles of this series, nothing of interest or importance is omitted by this division. The books to be counted may be classified as follows:—

- I. Systematic treatises and monographs by physicians residing in this country, including reports of hospitals, corporations, and government departments.
- II. Reprints and translations of foreign medical books.
- III. Medical journals.
- IV. Transactions of medical societies.

The first, third and fourth classes include what is ordinarily meant by the phrase "American Medical Literature." From them are excluded books written by American authors, but printed abroad, as, for instance, those of Dr. Wm. Charles Wells; while on the other hand, they include books written by physicians born and educated abroad, but who may be said to have become citizens of this country, such as Tytler, Pascalis, Bushe, Dunglison, Jacobi, and Knapp.

The statistics of the four classes above given, include not only the medical literature of the United States for the century, but nearly all which the country has produced since the first settlement. At the commencement of the Revolutionary War, we had one medical book by an American author, three reprints, and about twenty pamphlets. The book referred to is the "Plain, Precise, Practical Remarks on the Treatment of Wounds and Fractures," by Dr. John Jones, New York, 1775. It is simply a compilation from Ranby, Pott, and others, and contains but one original observation, viz., a case of trephining followed by hernia cerebri.

The libraries of our physicians were composed, according to Bartlett,¹ of the works of Boerhaave, with the Commentaries of Van Swieten, the Physiology of Haller, the Anatomy of Cowper, Keil, Douglass, Cheselden, Monroe, and Winslow; the Surgery of Heister, Sharp, Le Dran, and Pott; the Midwifery of Smellie; the Materia Medica of Lewis; and the works of Sydenham, Whytt, Mead, Brookes, and Huxham. The works of Cullen were just beginning to be known. The only public medical library was that of the Pennsylvania Hospital, which contained, perhaps, two hundred and fifty volumes. There were probably not two hundred graduates of medicine in the country, and not over three hundred and fifty practitioners of medicine who had received a liberal education. Two medical schools had just begun, but had accomplished little previous to the war which closed them, there were no medical journals, and but one State Medical Society, that of New Jersey, had been organized. From this unpromising condition of things, have been developed the literary results, of which we now present a summary.

¹ A Dissertation on the Progress of Medical Science in the Commonwealth of Massachusetts, Boston, 8vo., 1810.

Table showing number of Medical Books printed in the United States from January 1, 1776, to January 1, 1876.

		1775 to 1799	1800 to 1809	1810 to 1819	1820 to 1829	1830 to 1839	1840 to 1849	1850 to 1859	1860 to 1869	1870 to 1875	Total.
CLASS I.											
American Medical Books	{ No. 1st edition	39	24	51	48	83	96	101	157	130	729
	{ No. later editions	9	4	14	17	34	49	80	85	44	336
	{ No. Vols. Total	51	31	77	86	136	162	197	256	180	1176
CLASS II.											
Reprints and Translations	{ No. 1st edition	28	39	64	72	145	135	99	104	81	767
	{ No. later editions	11	23	28	33	36	67	76	64	50	388
	{ No. Vols. Total	49	76	111	135	192	214	184	160	137	1274
CLASS III.											
Medical Journals	{ No. Journs. com'ced	1	5	6	17	18	26	52	38	32	195
	{ " " discont'd	.....	3	5	10	18	14	31	36	20	137
"A."											
Original	{ No. Vols. com'nced	2	21	27	85	104	173	376	292	296	1376
	{ No. Vols. compl'ted	2	20	27	79	98	166	366	271	283	1312
"B."											
Reprints	{ No. Journals	.....	.....	1	4	.....	5	1	3	3	17
	{ No. Volumes	.....	.....	9	29	20	46	71	51	32	258
CLASS IV.											
Transactions Med. Societies	{ No. Volumes	7	3	2	5	17	27	76	88	111	336

It will be seen from this table, that the medical literature of the United States really commences with the present century, and this is still more apparent, if the character of the works issued prior to 1800, be considered.

The first literary contributions of our physicians, after the close of the war, are contained in the memoirs of the American Academy of Arts and Sciences, Boston, 1785, and in the Transactions of the American Philosophical Society at Philadelphia, 1786. The first original separate work was the "Cases and Observations by the Medical Society of New Haven County, in the State of Connecticut," New Haven, 86 pp., 8vo., 1788. This is a collection of twenty-six articles, including several cases and autopsies, of interest, and a paper on the production of dysentery among troops by overcrowding and foul air, in which the connection of cause and effect is clearly demonstrated.

The majority of the succeeding publications, to the end of the century, related to the yellow fever, which was then epidemic along the whole Atlantic coast. The most prominent author of this period is Benjamin Rush, noteworthy also as an orator and politician. His writings excel in manner rather than matter, and the undoubted influence which he exerted over the earliest stages of American medicine, was probably due to his lectures rather than his published works. The best of his essays, and indeed the only one to-day worth consulting, is that on diseases of the mind, which contains some original observations of interest. One of his eulogists, Dr. Ramsay,¹ says: "On the correctness of this opinion

¹ Eulogium upon Benjamin Rush, by David Ramsay, Philadelphia, 1813, 8vo., pp. 79.

[viz., his fondness for the use of the lancet] his fame as an improver of medicine in a great degree must eventually rest." And to the correctness of this judgment we entirely assent.

The work of James Tytler¹ is a good compilation, and contains, among other data not to be found elsewhere, an interesting letter by Dr. John Warren, of Boston. Tytler was born in Scotland in 1747, came to this country about 1796, and was drowned in 1804; he possessed extensive and varied learning, and wrote much, but for the most part on non-medical subjects.

The works of Noah Webster,² though mainly historical, are still of interest, and worth preservation.

Another writer of this period is Dr. William Curry, a native of Pennsylvania, 1755-1829. At first educated for the church, he acquired an excellent knowledge of Latin and Greek, and studied medicine under Dr. Kearsley, of Philadelphia. During the Revolutionary War he served as surgeon in the American army, being attached to the military hospital on Long Island, in 1776. After the war, he at first settled at Chester, but removed to Philadelphia about 1791. He was one of the original fellows of the College of Physicians of Philadelphia, and for many years a member of the Board of Health. His principal works in addition to his numerous pamphlets and articles on yellow fever, are his "Historical Account of the Climates and Diseases of the United States," 1792; and his "View of the Diseases most Prevalent in the United States," Philadelphia, 1811.

Towards the close of the century, and for a few years thereafter, there were published in Boston, New York, and Philadelphia, a number of medical theses, which, being classed as pamphlets, are not taken into account in our statistics, and are noticed here for the sake of saying a word with regard to this class of medical literature. A medical dissertation prepared, not for the press, but simply as a formality necessary for the obtaining of a diploma, as is the case with nearly all those which have been presented at our medical schools for the last fifty years, fairly merits the denunciation of Professor Gross, "that not one in fifty affords the slightest evidence of competency, proficiency, or ability, in the candidate for graduation."

Such was not the case, however, with regard to the theses above referred to, nor can it be justly said with regard to any series of printed theses of the European schools. It would seem, therefore, that when prepared as they should be, with reference to the probable criticisms, not merely of a single professor, but of the press and the public, there is the strongest inducement to refrain from plagiarism, and to produce the best work of which the candidate is capable; and it is well known to those who have had frequent occasion to consult them, that collections of printed medical theses are valuable, as historical documents, presenting a reflex of the teachings of the school, and as containing accounts of cases and original investigations, or particular doctrines of the student's preceptor, which cannot be found elsewhere. The proportion of copied matter, vague speculations, and other rubbish, does not, upon the whole, appear to be so much greater in this than in some other classes of medical litera-

¹ A Treatise on the Plague and Yellow Fever, with an Appendix, 8vo., 1799.

² A Collection of Papers on the subject of Bilious Fevers, prevalent in the United States for a few years past. 246 pp. 8vo. New York, 1796. A Brief History of Epidemic and Pestilential Diseases; with the principal Phenomena of the Physical World which precede and accompany them, and Observations deduced from the facts stated. 2 vols., 8vo., Hartford, 1799.

ture, as to warrant their wholesale condemnation; and the remedy for the present unsatisfactory character of the theses of our medical students, appears not to be their abolition, but the requiring that they shall be printed, and considered as an important and real test of the merit of the candidate. They should of course be written in the vernacular. The influence which a teacher has in directing the thoughts of his pupils, is very well shown in the theses of the Philadelphia school, a considerable number of which related to medical botany, under the stimulus given by Dr. Barton to that branch of study.

During this period, and prior to the establishment of any medical journal, or regular publication of the transactions of any medical society, a number of communications from American physicians were sent to societies in Europe, and appear in their transactions. Perhaps the most notable paper of this kind was "An Experimental Inquiry into the Properties of Opium," by John Leigh of Virginia, which obtained the Harveian prize for 1785, and was printed at Edinburgh in the following year. It is worth consultation, not only for the facts which it records, but for the method of investigation pursued, which was unusual in that day of theories.¹

From the year 1800 to the present time, the above table shows that there has been a steady increase in the amount of our indigenous medical literature, corresponding in the main to our increase in population and wealth. To obtain some notion of the quality and value of this production, a more detailed analysis is necessary.

The greater part of these books are compends relating to the treatment of diseases and injuries. Those which have been most popular, and are the best known, are the text-books and systematic treatises. These are for the most part compilations, but their importance is by no means to be underestimated, for the practice of the majority of the physicians of this country to-day, is based on the text-books of the teachers in the New York and Philadelphia schools. Also we must remember that "there are compilations and compilations." The preparation of such systematic treatises as those of Flint, Gross, Stillé, and Wood, does not require less labour or thought, or give less scope for display of genius, than the so-called original monographs.

Writers of this class bring into their proper relations the isolated facts and observations scattered through many books, give them the mint stamp of value, and put them into general circulation.

For reasons already stated, and for want of space, but few books can here be noticed, even by title, and in connection with these will be given some very brief biographical data relating to a few authors. Of living writers and their works, as little as possible will be said.

In Anatomy our principal systematic works have been produced by Wistar, Horner, Morton, Richardson, Agnew, Hodges, Leidy, and Smith. None of them are now of interest. Dr. Caspar Wistar, 1761-1818, was of German descent, and a native of Philadelphia. Having obtained a good classical education, he studied medicine under Dr. John Redman,

¹ In this connection also may be mentioned a rare and little known work, being the oration delivered at the University of Virginia in 1782, by J. F. Coste, the Medical Director of the French Forces. Its subject is "*Antiqua novum orbem decet medico philosophia*;" it is dedicated to Washington, of whom the author was a personal friend, and makes a volume of 103 pages, 8vo.; printed at Leyden, in 1783.

and took the degree of Bachelor of Medicine, in 1782. He continued his studies at Edinburgh, where he graduated M.D. in 1786. Returning to Philadelphia, he became Adjunct Professor of Anatomy in 1791, and continued to lecture until his death. His *System of Anatomy* was issued in parts, 1811–1814, making two volumes, and was a popular text-book for a long time.

The first work issued by Dr. Horner was a *Dissector's Manual*, in 1823. This was followed by his treatise on *General and Special Anatomy* in 1826, his *Anatomical Atlas*, and treatise on *General and Special Histology*.

A good original work has yet to be written on this last subject, in this country. In surgical anatomy, Drs. Anderson and Darrach have produced partial treatises, the first on the groin, pelvis, and perineum, New York, 1822; the second on the anatomy of the groin, Philadelphia, 1830.

Drs. N. R. Smith, Goddard, and Neill, have each issued a work on the *Surgical Anatomy of the Arteries*. Among the few original works in this department, should be mentioned those of Dr. John D. Godman, a native of Annapolis, Md., 1794–1830. Poor and almost friendless, but urged on by an unquenchable thirst for knowledge, he persisted in obtaining an education in spite of the greatest difficulties and discouragements, and at last took the degree of M.D. at the University of Maryland in 1818.

In 1821 he went to Cincinnati to accept a chair in the Medical College of Ohio, but dissensions in the faculty induced his speedy resignation. He then established a medical journal hereafter to be alluded to, but in 1822 went to Philadelphia and began a course of private lectures in anatomy. In 1826 he accepted the chair of Anatomy in Rutgers College in New York, but failing health soon compelled him to cease teaching, although he continued to use his pen until just before his death. Dr. Godman was an anatomist by nature, and though the necessities of bread-winning prevented him from accomplishing any great work, his treatise on the fascia¹ and his contributions to physiological and pathological anatomy² are really original and valuable productions.

The papers of Dr. John Dean on the "*Microscopic Anatomy of the Lumbar Enlargement of the Spinal Cord*," Cambridge, 1861, and on "*The Gray Substance of the Medulla Oblongata*," published by the Smithsonian Institution in 1864, are the results of careful work, and are noteworthy for the use made of photo-lithography from micro-photographs to obtain the illustrations.

The craniological works of Drs. Morton and J. A. Meigs should be referred to here. Dr. Samuel George Morton, 1799–1851, was a native of Philadelphia, and graduated in medicine at the University of Pennsylvania in 1820, after which he continued his studies for three years at Edinburgh, obtaining his degree in 1823. From 1839 to 1843 he was Professor of Anatomy in the Pennsylvania Medical College. His fame rests upon his "*Crania Americana*," Philadelphia, 1839, and his "*Crania Egyptiaca*," *ibid.*, 1844; works which have a world-wide reputation, and whose value is permanent. His labours in this direction have been continued by Dr. J. Aitken Meigs, whose "*Catalogue of Crania*," Philadelphia, 1857, is well known to all who are interested in this subject.

¹ *Anatomical Investigations, comprising Descriptions of Various Fasciæ of the Human Body*, 8vo., Philadelphia, 1824.

² *Contributions to Physiological and Pathological Anatomy*, 8vo., Philadelphia, 1825.

In physiology, our text-books have been the works of Dunglison, Draper, Dalton, and Flint, all too well known to require more than a mere reference. The work of Professor Draper, published in 1853, was the first in this country in which micro-photographs were used to obtain illustrations. To these may be added the works of Reese, Oliver, Goadby, and Paine. Of special treatises and essays, the most important are Beaumont's *Experiments on Digestion*, Plattsburgh, 1833; Draper "On the Forces which produce the Organization of Plants," New York, 1844; Joseph Jones' "Investigations," published by the Smithsonian in 1856; S. W. Mitchell's "Researches upon the Venom of the Rattlesnake," *idem*, 1860; and Hammond's "Physiological Memoirs," Philadelphia, 1863. In this department Brown-Séquard may be claimed as an American author; some of his researches having been made, and the results first published in this country. Those who are familiar with the literature of thirty years ago will remember with a smile, the treatise of Emma Willard on the circulation of the blood, and the controversies to which it gave rise. The "Essays on the Secretory and the Excito-Secretory System of Nerves," by Dr. H. F. Campbell of Georgia, Philadelphia, 1857, should be remembered in this connection, as also the pamphlets of Dr. Dowler of New Orleans.

In the department of *Materia Medica* and Therapeutics, we have made a good record. In Medical Botany, the works of B. S. Barton and Jacob Bigelow deserve especial mention as works of permanent value. The "Illustrations of Medical Botany," edited by Dr. Carson, Philadelphia, 1847, containing one hundred plates, in folio, is a rare and costly work, a considerable part of the edition having been destroyed by fire.

The first systematic treatise on *Materia Medica* and Therapeutics, produced in this country, was that of Dr. Chapman, Philadelphia, 1817. This was followed by the works of Eberle, J. B. Beck, Dunglison, Harrison, G. B. Wood, T. D. Mitchell, Biddle, Stillé, Riley, and H. C. Wood, all of which have been, or are popular text-books in the schools.

The majority of these authors will be referred to under other sections, but of three, a few words may here be said. Dr. John P. Harrison was born in Louisville in 1796; studied under Dr. Chapman, and graduated in medicine in 1819. He was Professor of *Materia Medica* in the Cincinnati College from 1836 to 1839. In 1841 he accepted the same chair in the Medical College of Ohio, in 1847 was transferred to that of Theory and Practice, and died of cholera in 1849. He was one of the editors of the *Western Journal of Medicine*, and of the *Western Lancet*; published a collection of his essays in 1835, and his "*Elements of Materia Medica and Therapeutics*" in 1846.

The principal work on *Materia Medica* is the "United States Dispensatory" of Wood and Bache. Dr. Franklin Bache was born in Philadelphia in 1792, and died in 1864. Graduating as Bachelor of Arts in 1810, he studied under Dr. Rush, and obtained his medical degree in 1814. His tastes led him to the special study of chemistry, of which branch he was appointed professor in the Franklin Institute, in 1826. In 1841 he accepted the same chair in the Jefferson School. His principal work was in connection with the United States Pharmacopœia and the Dispensatory, which have made his name familiar to every physician in the United States. The first proposal to form a Pharmacopœia in this country was made to the College of Physicians of Philadelphia, in 1787, with the result of the appointment of a committee, which seems to have continued

about ten years, but effected nothing. In 1808 a Pharmacopœia was published by the Massachusetts Medical Society, and in 1816 another was issued by the New York Hospital. Our present national Pharmacopœia originated in a plan submitted to the New York County Medical Society, in 1817, by Dr. Lyman Spalding. A leading part in the formation of the first edition, by the convention which met in Washington in 1820 for that purpose, was taken by the College of Physicians of Philadelphia, through its delegates, and more especially by Dr. Thomas T. Hewson; and in the subsequent revisions, Drs. Hewson, Bache, and Wood were the principal workers. The first revision, adopted in 1830, was entirely the production of these gentlemen, and was substantially a new work. The Dispensatory was projected by Drs. Wood and Bache as an exposition of the Pharmacopœia, and a means of making it more popular.

The exposition has, so far as our physicians are concerned, entirely overshadowed the text, and in a financial point of view, the Dispensatory is the most successful medical book ever published in this country.

Among writers on *Materia Medica*, distinguished in their day, may be mentioned Dr. William Tully, 1785–1859, who graduated at Yale in 1806, and attended medical lectures at Dartmouth College in 1808–9. He received the honorary degree of M.D. from Yale in 1819. In 1824, he was appointed Professor of Theory and Practice in the Castleton School, and in 1826 removed to Albany, forming a partnership with Dr. Alden March. In 1829, he accepted the chair of *Materia Medica* and Therapeutics at Yale, and removed to New Haven, but continued his lectures in Castleton until 1838. He ceased teaching in 1841. His principal works were the “*Essays on Fevers*,” published with those of Dr. Miner 1823, a work which gave rise to much controversy, and was, upon the whole, not favourably received; a prize essay upon *Sanguinaria*, published in the *American Medical Recorder* in 1828; some papers in the *Boston Medical Journal*; and finally, his treatise entitled “*Materia Medica, or Pharmacology and Therapeutics*,” Springfield, 1857–58, in two large volumes 8vo. This was published in numbers, was not a popular work, nor calculated for the use of a student, but shows great industry and learning in every page. Complete copies of it are not now easily obtained, although it cannot be said to be rare. His style is discursive, diffuse, and polysyllabic, and a decided effort is necessary to peruse his writings; but his knowledge of facts was minute and exact, and his last work is a mine of information, which is even now worth exploring by the curious.

In Surgery, our indigenous text-books have been produced by Dorsey, Gibson, S. D. Gross, Ashhurst, and Hamilton. On *Operative Surgery* we have the treatises of Pancoast, Piper, H. H. Smith, Stephen Smith, and Packard. The posthumous work of McClellan is not a systematic treatise, but a series of essays and cases, in which the description of Shock is especially noteworthy as being true to life. Of monographs, the most valuable are those by Professor Gross, on Wounds of the Intestines, 1838; on Diseases of the Bladder, 1851–55; on Foreign Bodies in the Air-passages, 1854 and 1862; and Diseases of the Bones and Joints, 1830; F. H. Hamilton on Fractures and Dislocations, 1860, fifth edition, 1875; Durkee and Bumstead on Venereal; Van Buren and Keyes, and Gouley on the Urinary Organs; Bushe on Diseases of the Rectum; Carnochan on Congenital Dislocations of the Head of the Femur; H. J. Bigelow on the Mechanism of Dislocation and Fracture

of the Hip; Ashhurst on Injuries of the Spine; Markoe on Diseases of the Bones; and Garretson's Oral Surgery. Specially valuable collections of cases, are the works of John C. Warren, on Tumors, Boston, 1837; and of J. Mason Warren; the pamphlets of Sayre on Orthopædic Surgery; N. R. Smith on Fractures of the Lower Extremity; and J. C. Nott, "Contributions to Bone and Nerve Surgery." As an example of careful statistical work, the treatise of R. M. Hodges on "The Excision of Joints," Boston, 1861, is to be specially commended.

The treatise of Dr. Gross, on Wounds of the Intestines, above referred to, first appeared in the "Western Journal of Medicine;" it contains the results of numerous experiments and observations, and is of much practical value and interest. It is a rare book, and a copy of it may properly be considered a prize by the collector.

In Military Medicine and Surgery nothing of value was produced by the revolutionary war, the war of 1812, or the war with Mexico. This deficiency has been, to a great extent, made up by the number and value of works resulting from our late war.

The Medical and Surgical History of the War will be, when completed, the largest medical work ever produced in this country. The publications of the Sanitary Commission, including the works of Flint, Gould, and Lidell, contain valuable data. The manuals of military surgery have been written by Gross, Hamilton, Tripler, Blackman, Chisholm, and Warren. Other works which should be remembered in this connection are, Woodward on Camp Diseases, the statistical reports and circulars issued from the Surgeon General's Office, and the medical statistics of the Provost-Marshal General's Office, compiled by Dr. Baxter, making two handsome quarto volumes, which are a most valuable addition to our knowledge of anthropometry and medical topography.

In the departments of Theory and Practice of Medicine, we have produced a fair amount of monographs and text-books, the most important of the latter class being those of Chapman, Eberle, G. B. Wood, and Flint. The following is a brief outline of the lives of a few who were our principal writers and teachers in this branch of medicine, but who now rest from their labours. Among them, there are few, who, in their day, had a more extended reputation, or were more popular than Dr. Nathaniel Chapman.

Born in Virginia in 1780, he received an excellent general education, became a pupil of Dr. Rush, with whom he was a favourite, graduated at the University in 1800, then spent three years in Europe, one as a pupil of Abernethy, and two at Edinburgh, and in 1813 was elected to the chair of Materia Medica in his Alma Mater, to be exchanged in 1816 for that of the Theory and Practice of Medicine, which he held until 1850, when he resigned. He died in 1853. His "Therapeutics and Materia Medica," published in 1817, was the best work of the kind in English at that date. He was the first President of the American Medical Association after its permanent organization; President of the American Philosophical Society, a popular lecturer, a genial companion, and in his prime probably the most distinguished physician in the United States. He edited, for seven years, the Philadelphia Journal of the Medical and Physical Sciences. Many of his lectures were published in the "Medical Examiner," in 1838-40. Two volumes of these

lectures were published in 1844, and a compendium of his course on theory and practice was issued in 1846.

Contemporary with Dr. Chapman, and for twenty-five years associated with him as a teacher, was Dr. Samuel Jackson, 1787-1872, a native of Philadelphia, and educated in the University of Pennsylvania, having graduated in medicine in 1808. From 1825 to 1863, he was Professor of the Institutes of Medicine in his Alma Mater. His "Principles of Medicine" (Philadelphia, 1832, 8vo.) was a treatise on pathology, founded on the doctrines of Broussais, and received high praise in its day. It was also the subject of a long and acrimonious critical review by Dr. Caldwell. The popular story that Dr. Jackson recalled all the copies of this work that he could is incorrect; the entire edition was sold in the usual manner, and the publishers desired to issue another, but the author refused, on the ground that the science was undergoing such rapid and great changes that he would feel it necessary to re-write the entire work, a labour which his health and the demands of his private practice would not allow him to undertake. His most important writings are contained in the American Journal of the Medical Sciences, the last being a paper on a rare disease of the joints, in the July Number for 1870.

Dr. John Eberle, 1788-1838, was of German descent, and a native of Pennsylvania. After graduating in medicine in 1809, he went into politics, edited a newspaper, acquired intemperate habits, and became a bankrupt. Commencing life again, in 1825 he took the chair of Theory and Practice in the Jefferson School, which he held until 1831, when he removed to Cincinnati, and became connected with the Faculty of the Medical College of Ohio. In 1837, he removed to Lexington, Ky., to accept a chair in the Transylvania School, but could not lecture, and soon died. His treatise on the Practice of Medicine, first published in 1829, was, in its day, a very popular work, in part at least because of the formulæ which it contained, but is now forgotten.

Dr. Elisha Bartlett, born in Rhode Island in 1804, died 1855, graduated in medicine at Brown University in 1826, after which he spent a year in Paris. He held Professorships at Woodstock, Vt., Pittsfield, Mass., Dartmouth, Baltimore, Lexington, Louisville, and finally, in 1850, in the University of the City of New York. Of the numerous productions of his pen, the most noteworthy are the "Inquiry into the Degree of Certainty in Medicine," etc., Philadelphia, 1848; "The History, Diagnosis, and Treatment of Typhoid and Typhus Fever," Philadelphia, 1842; and, "The History, Diagnosis, and Treatment of the Fevers of the United States," Philadelphia, 1847; of which, three subsequent editions were issued. To these may be added his essay on the Philosophy of Medical Science, in which the importance of facts and observations is insisted on, and all theorizing is denounced, in accordance with the teachings of Louis.

Dr. David Hosack, 1769-1835, a native of New York, graduated as Bachelor of Arts at Princeton in 1789, and as Doctor of Medicine in the University of Pennsylvania in 1791. After practising a year at Alexandria, Va., he spent two years in Edinburgh and London. Returning to New York, he entered into partnership with Dr. Samuel Bard, was appointed Professor of Botany in Columbia College in 1795, to which was added the chair of Materia Medica, in 1797. In 1807, he was chosen Professor of Surgery and Midwifery in the newly-formed

College of Physicians and Surgeons of the State of New York, and in 1813, took the chair of Theory and Practice. In 1826, he resigned, with others, and went into the Rutgers Medical College. His writings appear in the philosophical transactions, in the "Medical and Philosophical Register," of which he was the founder, and as occasional lectures and pamphlets. They were collected and published as "Essays on various subjects in Medical Science," in three volumes, New York, 1824-1830. His "System of Nosology" reached two editions; his "Lectures on Theory and Practice" were edited by Dr. Ducachet, and published at Philadelphia in 1838. His most important paper was his "Observations on Febrile Contagion," and on the means of improving the Medical Police of the City of New York, N. Y., 1820. As a lecturer, editor, and writer, he exercised much influence on the profession, and his literary and scholarly tastes were imparted to his pupils, and especially to Dr. John W. Francis, who, after his graduation in 1810, became associated with him in practice. Dr Francis was the son of a German grocer, born in New York, 1789, died 1861. He was for thirteen years Professor in the College of Physicians and Surgeons, and followed Dr. Hosack to Rutgers, the close of which ended his career as a teacher.

Dr. Joseph Mather Smith, 1789-1866, graduated at the College of Physicians and Surgeons in 1815, and was Professor of Theory and Practice of Physic, same school, 1826 to 1855, when he took the chair of Materia Medica. He contributed largely to literature through the medical journals; presented some interesting reports to the American Medical Association, and published "Elements of Etiology," a "Philosophy of Epidemics," New York, 223 pages 8vo.

For beauty of style as a writer and lecturer, Dr. Samuel Henry Dickson is pre-eminent. Born in Charleston in 1798, he graduated at Yale in 1814, and in Medicine at the University of Pennsylvania in 1819; was Professor in the Charleston Medical School from 1824 to 1831, 1833-34, 1850-7; in the New York University, 1847-50; and in the Jefferson School, 1858; he died March 31, 1872. His systematic works were not very successful, or worthy of special remark, but his journal contributions, and especially his volumes of essays, are among the most attractive literature of medicine.

John K. Mitchell, born in Virginia, 1793, took his academical degrees at the University of Edinburgh, commenced his medical studies under Dr. Chapman in 1816, and graduated in medicine at the University of Pennsylvania in 1819. After three voyages to India and China, for the sake of his health, he returned to Philadelphia, and in 1822, began to deliver lectures on Medical Chemistry in the Summer School. In 1841, he was elected to the chair of the Practice of Medicine in the Jefferson Medical College, which he filled to the date of his death in 1858. As an original investigator, and clear logical reasoner, his name stands among the highest, and is probably destined to a higher relative position in the future, than it enjoys even now. His papers on Endosmosis, Mesmerism, Ligature of Limbs for Spasm, and Cryptogamous Origin of Fevers, will be consulted, not only for the original facts which they set forth, but as models of suggestiveness, if the phrase may be permitted.

Dr. Charles Frick, born at Baltimore August 8, 1823, received the degree of Doctor of Medicine from the University of Maryland in 1845.

In 1856, he was chosen to the chair of *Materia Medica* in the Maryland College of Pharmacy, and in 1858, he became Professor of *Materia Medica* and Therapeutics in the University of Maryland. His most valuable contributions to literature are his "Analysis of the Blood," *American Journal of the Medical Sciences*, January, 1848; "Treatise on Renal Diseases," 1850; "On Diabetes," *American Journal of the Medical Sciences*, 1852; "On Urinary Calculi," *American Medical Monthly*, April, 1858. He died March 25, 1860, of Diphtheria, contracted from a patient upon whom he had performed the operation of Tracheotomy five days previous. All his papers are careful, conscientious reports of original observations, with the least possible amount of theory, and with direct reference to practice.

Among the diseases which have received the greatest amount of attention in this country may be mentioned yellow and malarial fevers, and diseases of the chest. Our literature on yellow fever includes over one hundred books and pamphlets, besides more than six hundred journal articles. It was the epidemic of this disease along the North Atlantic coast which gave the first impetus to medical authorship in this country, and produced a mass of controversial writings which, although of little value in a scientific point of view, were useful, as giving their authors the habit of writing for the press. The earlier books have already been referred to, but mention should be made of the writings of Felix Pascalis *Ouviere*, generally known under the name of Pascalis. Dr. Pascalis was a native of Provence, France, and was born about 1750. Having graduated in medicine at Montpellier, he went to St. Domingo, and there practised his profession until driven out by the Revolution of 1793, when he came to Philadelphia, and subsequently settled in New York, where he died in 1833. Besides his works on Yellow Fever, he wrote a treatise on Syphilis, New York, 1812, and contributed papers to journals. He was one of the editors of the *Medical Repository*.

Another writer on Yellow Fever who seems to be little known except in the South is Dr. J. L. E. W. Shecut, a native of South Carolina, born in Beaufort, 1770; died in Charleston, 1836. He studied under Dr. Ramsay, of Charleston, graduated M.D. at Philadelphia in 1791, and at once commenced practice in Charleston.¹ His most important essays were collected and published in one volume, Charleston, 1819, under the title of "Shecut's Medical and Philosophical Essays." This book, which is quite rare, contains his account of the yellow fever of 1817, first published in that year, and also his "Essays on Contagions and Infections," first published in 1818, and should be consulted by those who wish to trace the history of opinions in the South relating to this disease.

The principal work on Yellow Fever, which includes the information of all others of a prior date, is that of Dr. René la Roche, published in 1855. Dr. La Roche was of French descent, born in Philadelphia, in 1795, his father being an emigrant from St. Domingo. Unlike the majority of prominent American physicians, he was not connected with a large medical school, and his justly deserved reputation rests entirely upon his writings, and especially on his treatise on Yellow Fever, which is a model of research, and is remarkable, not only for the number, but the accuracy of its references, and the impartiality with which opposing statements are given.

¹ For these data I am indebted to Dr. Robert Leiby, of Charleston.

The most valuable recent articles on this disease are in the New Orleans and the Charleston Medical Journals, but the great majority of them are historical and controversial.

During the course of an epidemic, physicians are too busy to make observations which require much time or care, or to make more than brief notes. The papers of Drs. Faget,¹ Logan,² and Sternberg,³ giving temperature observations, make an advance in the right direction, but we lack data as to the pathological chemistry of the disease, and as to its relations with the malarial fevers. With regard to this last class of diseases, our literature is even more extensive than that of the preceding, and occupies much space in the journals of the West and South.

Our most valuable contribution to the natural history of malarial disease is the treatise of Dr. Daniel Drake, on the principal diseases of the Interior Valley of North America. This work is the "Magnum Opus," and results of the life-long labour, including extensive personal observations, literary research, and matured reflection, of a man whose fame, as compared with that of his contemporaries, will probably be greater a century hence than it is to-day, and whose name, even now, should be among the first on the list of the illustrious dead of the medical profession of the United States. The son of an illiterate Kentucky pioneer, brought up in a log cabin, attending a country school in the winter, and using the remainder of the year working on a farm, he surmounted the obstacles thus placed in his way, and by unceasing labour, joined to a sound common sense, which rose to the level of genius, took a leading position as author, editor, practitioner, and teacher. Commencing the study of medicine at the age of sixteen, he attended his first course of lectures in 1805, and his second in the University of Pennsylvania, in 1815, at the end of which he graduated. He was Professor successively in the Transylvania School, the Medical College of Ohio; a second time in the Transylvania; the Jefferson School; the Medical Department of Cincinnati College; the University at Louisville; and again in the Medical College of Ohio. He died November 6, 1852. His first publication was a pamphlet on the climate and diseases of Cincinnati, published in 1810, and reissued as "The Natural and Statistical View or Picture of Cincinnati and the Miami Country," published in 1815. This work is quite rare, and is interesting as being the germ from which sprung his great work above referred to.

He founded the "Western Journal of the Medical and Physical Sciences," which would be of much value, if for no other reason, on account of a series of essays on Medical Education, by Dr. Drake, which were published in it. These essays were issued in a separate volume, in 1832, and form, upon the whole, the most satisfactory contribution to this vexed question which this country has ever produced. He commenced the preparation of his work on the diseases of the Mississippi Valley in 1822, and the second volume was not issued until after his death. Very few of the younger physicians of this country are familiar with his writings. Of his essays on Medical Education and Diseases of North America, no second editions have been published; but if there are any books to which the hackneyed phrase of the reviewer, "No physician's library is complete without it," apply, it is to these works of

¹ New Orleans Med. and Surg. Journal, 1873, i., N. S., p. 145.

² Do. do. 1874, ii. p. 779.

³ Amer. Jour. Medical Sciences, 1875, lxx. p. 99.

Dr. Drake, as far as American physicians are concerned, and they are most distinctively and peculiarly American books, in subject, mode of treatment, and style of composition.

The dissertation of Dr. J. K. Mitchell "On the Cryptogamous Origin of Malarious and Epidemic Fevers," is an ingenious piece of reasoning, and presents a summary of all the *à priori* arguments in favor of this theory which can be advanced. The papers of Dr. Salisbury on the same subject are without value.

Upon the subject of diseases of the chest the most noteworthy monographs have been the works of Morton, McDowell, Lawson, and Flint on Consumption; of Horace Green on the Diseases of the Air-passages; La Roche on Pneumonia, and of Gerhard and Flint on Diagnosis of Diseases of the Chest. The treatise on Phthisis, by Dr. L. M. Lawson, adds another to the numerous examples of careful studies by physicians of diseases with which they are themselves afflicted. Dr. Lawson was a native of Kentucky; born 1812, died 1864. His early education was defective. At the age of twenty he was licensed to practise, but it was not until 1838 that he obtained his diploma from the Transylvania School. In 1844 he was elected to a Professorship at Lexington; from 1847 to 1853 he filled the chair of *Materia Medica* in the Medical College of Ohio, and then became Professor of Principles and Practice of Medicine. During the winter of 1859-60, he lectured on Clinical Medicine in the University of New Orleans. He founded, and for a long time conducted, the "Western Lancet," in which many of his lectures were published.

Dr. W. W. Gerhard, 1809-72, was a native of Philadelphia, and a graduate of the University of Pennsylvania. After taking his degree he spent two years in Paris, and became thoroughly indoctrinated with the teachings of Louis. On his return to Philadelphia he was appointed lecturer at the Medical Institute, and Assistant Clinical Lecturer to Professor Jackson. For twenty-five years he was the senior Physician to the Pennsylvania Hospital. Some of his clinical lectures appeared in the "Medical Examiner," of which he was one of the editors. His principal work was his "Treatise on Diagnosis of Diseases of the Chest," Philadelphia, 1842; second edition, 1846.

Dr. Horace Green, 1802-1866, was a native of Vermont, and a graduate of Castleton Medical College in 1824. From 1840 to 1843 he was Professor of Theory and Practice in the same school; and in 1850 took the same chair in the New York Medical College, of which he was one of the founders, continuing to lecture until 1860. In connection with this school he established, with his colleagues, the "American Medical Monthly." He was the first in this country to devote himself to a specialty, and his works on the local treatment of diseases of the air-passages attracted much attention, although they are not of a character to add permanently to his fame.

In medical jurisprudence, the systematic works of Beck, and Wharton and Stillé, and the treatise of Dr. Wormley on Poisons, are the most important, and each of them compares most favourably with any similar works in existence.

There are probably not to be found in the annals of medicine so large and valuable contributions to its literature by three brothers, as were made by the Beck family of New York.

John B. Beck, 1794-1851, graduated in Columbian College in 1813, became a pupil of Dr. Hosack, and graduated in Medicine at the

College of Physicians and Surgeons in 1817, presenting, as a thesis, a paper on Infanticide, which was published, and is still a standard work on this subject. In 1822 he assisted in establishing the "New York Medical and Physical Journal," with which he was connected for the next seven years, and in which he published numerous articles. In 1826 he became Professor of *Materia Medica* in the College of Physicians and Surgeons, just newly organized. His principal works, in addition to those already alluded to, were his "Essays on Infant Therapeutics," New York, 1849; second edition, 1855; and his *Historical Sketch of the State of Medicine in the American Colonies*; "Lectures on *Materia Medica*," and a collection entitled, "Researches in Medicine and Medical Jurisprudence."

Theodoric Romeyn Beck, 1791-1855, graduated at Union College, Schenectady, studied under Dr. Hosack, and graduated as M.D. at the College of Physicians and Surgeons, in 1811. He was appointed Professor of the Institutes of Medicine and Medical Jurisprudence in the College at Fairfield, in 1815. In 1817 he became Principal in the Albany Academy, and gave up the practice of medicine. In 1840 he took the chair of *Materia Medica* in the Albany Medical College, which he held until 1854. His great work was his treatise on Medical Jurisprudence, which appeared in 1823, in two volumes, and of which, including four English editions, ten editions were issued during the author's life.

Dr. Lewis C. Beck, 1798-1853, the younger brother of the preceding, studied medicine under Dr. Dunlop, and was admitted to practice in 1818. In 1826 he was elected Professor of Botany and Chemistry in the Vermont Academy of Medicine. This position he resigned in 1832. In 1836 he was appointed Mineralogist to the Geological Survey of the State of New York, and in 1840 was elected Professor of Chemistry and Pharmacy in Albany Medical College. His contributions to medical literature, to chemistry, meteorology, and mineralogy, were numerous. His principal medical work was his Report on Cholera, made to the Governor of New York in 1832.

The literature of obstetrics has been so fully given by Dr. Thomas, in a preceding article of this series, that further reference to it is superfluous. We will add only, with regard to Dr. Hugh L. Hodge, that he was a graduate of Princeton, a pupil of Dr. Wistar, and that his early taste was for surgery rather than obstetrics. He was induced to change his specialty by Dr. Dewees. He was afflicted with defective vision, which increased with age, and his great work on Obstetrics was produced entirely by dictation. He commenced as a lecturer in the Medical Institute, and was elected Professor of Obstetrics in the University of Pennsylvania in 1835, the rival candidate being Dr. Charles D. Meigs, a lecturer in the Philadelphia Association for Medical Instruction, who six years later obtained the chair of Obstetrics in the Jefferson School. The literary works of Dr. Meigs compare very unfavourably with those of his rival as to scientific value and exactness, but they are much more attractive to students and those who read for pleasure rather than instruction.

We have three names of American medical writers whose works should be mentioned here, viz., Coxe, Watson, and Dunglison.

Dr. John Redman Coxe, 1773-1864, was a type of the medical scholar, who loves books for their own sake, and who takes more pleasure in discovering a forgotten sentence in a folio of the fifteenth century

than in original investigations in the light of the present day. Born in Trenton, New Jersey, he completed his classical education at Edinburgh, studied medicine under Dr. Rush, and took his degree of M.D. at the University of Pennsylvania in 1794, after which he continued his medical studies in London, Edinburgh, and Paris for about two years. He was elected Professor of Chemistry in the University of Pennsylvania in 1809, and of *Materia Medica* and Pharmacy in 1818. He filled the latter chair until 1835, at which date he retired, and was but little known thereafter. His *Dispensatory*¹ and *Medical Dictionary*² were useful compilations, and met an existing want. His *Observations on Vaccination*³ was his best original contribution to medicine. His *Inquiry on the Discovery of the Circulation of the Blood* was a paradoxical attempt to disprove the claims of Harvey. His last work, and the one most in accordance with his tastes, was "The Writings of Hippocrates and Galen," Philadelphia, 1846. He founded the first medical journal published at Philadelphia, preceding that published by Dr. Benj. Smith Barton by two months, and his library was, in its day, the best collection of ancient authors on medicine in this country.

Dr. John Watson, of New York, has been alluded to in the article on surgery. His literary tastes led him to historical studies and the collection of a valuable library, and his historical sketch of ancient medicine⁴ shows that he consulted and enjoyed consulting the original works of the fathers in medicine.

Dr. Robley Dunglison, a native of Keswick, England, born in 1798, was one of the most prolific of medical authors. He obtained his medical education at Edinburgh, Paris, and London; settled in the latter city, where he wrote a treatise on the diseases of children [1824], and was one of the editors of the *London Medical Repository* in 1823-24. In 1824 he accepted the invitation of Thomas Jefferson to fill the chair of Anatomy, Physiology, *Materia Medica*, and Pharmacy, in the University of Virginia. At this place he published in 1827 a syllabus of his course on *Medical Jurisprudence* and prepared his *Medical Dictionary*. In 1833 he took the chairs of *Materia Medica*, Therapeutics, Hygiene, and *Medical Jurisprudence* in the University of Maryland, and from 1836 to 1868 was Professor of the Institutes of Medicine in the Jefferson School. He died April 1, 1869. His *Systems of Physiology* (first edition 1832), *Hygiene* (first edition 1835), *Therapeutics* (1836), *Practice* (1842), and *Materia Medica* (1843), were popular in their day, nearly all of them passing through several editions. The work by which he will be remembered is his *Medical Dictionary*. The first edition of this was published at Boston in 1833, in two volumes. A peculiarity of this edition is that it contains brief biographical sketches of physicians, omitted in subsequent issues. The last edition, Philadelphia, 1874, edited by his son, is the most convenient work of the kind in existence.

Our literature on insanity and the pathology of mental disease is insignificant in comparison with the importance of the subject and the opportunities existing for its study, the only monograph of permanent value being the "Contributions to Mental Pathology," by Dr. Isaac Ray, 8vo., Boston, 1873. Considering the number and size of the

¹ The American Dispensatory. Phila., 1806, 4th ed. 1818.

² The Philadelphia Medical Dictionary. Phila., 1808, 2d ed. 1817.

³ Practical Observations on Vaccination. Phila., 1802.

⁴ The Medical Profession in Ancient Times. 8vo., N. Y., 1856.

asylums for the insane in this country, and the amount of money which has been spent upon them, it is rather curious that the medical officers connected with them should have contributed so little to the diagnosis, pathology, or therapeutics of diseases of the nervous system. An examination of the works relating to this subject, and more especially of the *American Journal of Insanity*, which is the most important, and which contains the transactions of the Association of American Superintendents of Hospitals for the Insane, will show that the thoughts of these specialists have been mainly directed to the subjects of construction and management of asylums and to the jurisprudence of insanity. This last subject is one of great and increasing importance; but our contributions to its literature consist rather of opinions and ontological speculations than of scientific observations. The annual reports of our insane asylums consist, for the most part, of business and financial statistics, and are intended for the use of appropriation committees rather than of physicians. There are some signs, however, that more attention will hereafter be given to recording of the physical phenomena of mental disease, and it is to be hoped that we may soon have some published results from the pathological department of the Utica Asylum, which will stimulate other institutions to undertake similar work. No more promising field to-day exists in medical science for valuable discoveries than in the wards and laboratory of a large, well-appointed hospital for the insane.

Upon the subject of hygiene no systematic work has yet been produced in this country, with exception of the treatise on *Military Hygiene*, by Dr. Hammond. One of the principal writers in this department was Dr. John Bell, a native of Ireland, 1796-1875. He came to this country with his parents, who settled in Virginia in 1810, and graduated in medicine in the University of Pennsylvania, after which he lectured for some years in the Philadelphia Medical Institute, and for two years in the Medical College of Ohio. His treatise on *Baths and Mineral Waters* is the only comprehensive and respectable treatise on this subject published in this country. The most important contributions to the literature of hygiene which we have produced are the reports of the various State and municipal boards of health, most of which, however, are of comparatively recent origin, and it is to be hoped are only just fairly commencing their career of usefulness.

The subject of hospital construction and hospital hygiene has been much discussed in this country, the latest production being a large and handsomely illustrated work published by the trustees of the Johns Hopkins Hospital of Baltimore.

The publications of our municipal, State, and national governments, relating to vital and medical statistics, are among our most valuable contributions to medical literature. The reports of city and State boards of health show each year evidences of more careful investigation into the probable causes of disease and the means of removing or diminishing them, and the necessity and economic value of such work is slowly but steadily becoming apparent to the educated classes of the community by means of the publications referred to.

The circulars and reports of the medical department of the army are sufficiently well known, and within the last few years a series of reports have been commenced by the Medical Department of the Navy and by the Marine Hospital Service of the Treasury Department, which it is to be hoped will become important additions to our medical literature, not

only in regard to statistics, but in the departments of hygiene, pathology, and therapeutics. It should not be forgotten by the physicians of the United States that they are, to a certain extent, responsible for the condition of the medical departments of the government, since the sympathy and opinions, expressed or implied, of the medical profession at large as to the work which these departments have done, or are trying to do, furnish the encouragement and stimulus which are necessary to the continuous production of good results, and also influence to a considerable extent the action of our legislators with regard to the officers of these departments.

The reports of the Surgeon-Generals of the Army, the Navy, and the Marine Hospital Service, while ostensibly presented to the Secretaries of War, the Navy, and the Treasury, are really, in a sense, made to the physicians of the country, who are the only competent judges as to whether the work is satisfactory, and commensurate with the means which have been allowed for its performance.

Of encyclopedic works, the result of the combined labour of many authors, like the great French dictionaries, but one specimen has been attempted in this country. This was the American Cyclopædia of Practical Medicine and Surgery, edited by Dr. Isaac Hays, of which two volumes, completing the letter "A" were published at Philadelphia in 1834-36, and reissued with a new title, "Medical and Surgical Essays," in 1841. The time is perhaps not far distant when a first-class publication of this character will be sufficiently in request in this country to warrant an attempt at its production.

Reprints and Translations.—The second class of medical works referred to in our statistics, includes the reprints and translations, which cannot be overlooked in an account of our medical literature, since they have formed an important part of the libraries of American physicians, even if quantity only be considered.

Prior to the Declaration of Independence, the largest and most important medical book printed in this country was the "Lectures on Materia Medica," of Cullen, issued at Philadelphia in 1775, in 4to., and advertised as "The very cream of physic," and as "absolutely necessary for all American physicians who wish to arrive at the top of their profession."¹

In 1776 was published, at Philadelphia, the treatise of Van Swieten on the Diseases Incident to Armies, with Ranby on Gunshot Wounds, and Northcote on Naval Surgery, forming a small volume of 164 pages, which is usually found bound with the second edition of John Jones' "Practical Remarks," etc., of the same date, and was probably the principal guide of the army surgeons during the Revolutionary War. Cullen's "First Lines of the Practice of Physic"¹ was reprinted from a smuggled copy, in 1781, at Philadelphia, in two volumes, 8vo., and five later American editions, the last edited, with a great flourish of trumpets, by Dr. Caldwell, in 1822, attest its popularity.

For thirty years after the Declaration of Independence, the majority of the reprints were works of English and Scotch writers, and especially of the Edinburgh school, the favourite authors being Cullen, Brown, John Hunter, Benjamin Bell, Denman, Smellie, Hamilton, Beddoes, and

¹ A copy of this work was purchased by the Library of the Pennsylvania Hospital 1780, for £135 5s. currency, equal to £1 15s. specie.

Robert Jackson. The largest edition sold was probably of the "Edinburgh New Dispensatory." The only translations of French or German medical works issued in this country prior to 1800 were, Swediaur on Venereal, New York, 1788, and Blumenbach's "Elements of Physiology," Philadelphia, 1795. The first medical book printed in Louisiana was "Médicaments et précis de la Methode de M. Masdevall," a pamphlet of 48 pages, relating to the yellow fever, issued in 1796.

The beginning of the influence of the French schools, which for the next fifty years was so powerful in the United States, especially in surgery, is marked by the editions of Boyer and Desault, Philadelphia, 1805, to which rapidly succeeded the works of Alibert, Richerand, and Bichat. In this connection may be permitted a reference to two works which are omitted from our statistics, since they were intended for non-professional use, but which had an extensive sale, and indirectly exerted a very considerable influence, viz., Buchan's Domestic Medicine, of which several editions were issued, the most important being that of Philadelphia, 1795, revised by Dr. S. P. Griffiths, and the "Primitive Physic," of John Wesley, of which there are several American editions of the last century.

Many foreign medical works have been issued in this country in connection with periodicals, such as the "Register and Library of Medical and Chirurgical Science," published at Washington, D. C., 1833-36, in which were issued "Bell on the Nerves," "Lawrence on the Eye," Velpéau's Surgery, etc.; The Select Medical Library, edited by John Bell; the American Medical Library, published under the supervision of Dr. Dunglison; and the "Medical News and Library," in which some valuable books have been issued.

The number of translations of French medical works which have been published in this country is one hundred and forty-eight (148). One hundred and one of these were issued prior to 1842, and only eight have appeared within the last ten (10) years.

The number of translations of German works issued has been sixty-four (64), of which but fourteen (14) were issued prior to 1842, and twenty-eight (28) within the last ten years.

The number of reprints of English medical books has been five hundred and eighty-four (584), thirty (30) of these were issued prior to 1800; two hundred and seventeen (217) during the next forty years, and three hundred and thirty-seven (337) since 1840, the production gradually increasing.

It is largely to French and German sources that we owe our works on pathology, pathological anatomy, pathological chemistry, and physiology.

The best systematic treatise on the practice of medicine from the German, published in this country, was that of Niemeyer, in 1869, the name of the author having been made somewhat familiar to the American public by a translation of his lectures on Phthisis, published the year previous. The works of Billroth on General Surgical Pathology, New York, 1871, Rindfleisch, a Text-book of Pathological Histology, Philadelphia, 1872, are the books which are to-day directing the work of the younger professional men of the country. The Cyclopædia of the Practice of Medicine, edited by Ziemssen, now in course of publication, is the most extensive medical work, native or foreign, which has ever been issued in the United States, and is probably destined to exercise great influence upon our investigation of diseases, whatever it may do for the practice.

Of the translations from the French, the most important have been those relating to anatomy, physiology, and surgery. The favourite authors have been Bichat, D. J. Larrey, Boyer, Orfila, Magendie, Laennec, Cazenave, Baudelocque, Louis, Velpeau, Broussais, Cazeaux, Colombat, Ricord, Vidal, and Malgaigne.

It would be useless to give lists of the titles of these; it is sufficient to say that they include nearly every important monograph or text-book produced by English writers: from Cullen, Brown, and Darwin, to Bennett, Watson, and Aitken; from John Hunter, Benjamin, John and Charles Bell, Pott, Hey, and the Coopers, to Erichsen, Paget, and Holmes; and from Hamilton and Smellie to Simpson, Barnes, and Duncan. The works of nearly all the great English teachers have been quickly reproduced on this side of the water, and their modes of treatment are those followed by the majority of our practitioners.

A few medical books have been printed in Spanish at Philadelphia, for the Mexican trade, including the "*Compendio de la Medicina*," by J. M. Venegas, 1827. The number of reprints in this country has been largely due to the want of an international copyright law, for which reason publishers found it much cheaper to take the work of an English author gratis, than to pay an American writer for his MS. Sometimes the name of an American physician is given as editor of the reprint, but in most cases, this means little more than that he approves the book, the so-called editing being imperceptible. To this remark a few honourable exceptions should be made, such as the additions by John Bell to the lectures of Stokes, of Gerhard to Graves; the reprints of Copland's Dictionary, in which the bibliographical additions, made by Dr. Charles A. Lee, are numerous and valuable, the editions of Velpeau's Surgery by Mott and Blackman, and the editions of Aitken's Practice by Dr. Clymer, who has added much to the completeness of the work.

This so-called editing was the subject of some caustic criticism, and has of late years almost entirely disappeared. With regard to the merits of the International Copyright question, there has been much discussion. On the one side, it is truly said that the desire for books increases by the supply, and that the sale of the cheap reprints produces a market for indigenous productions. On the other side, it is affirmed with equal truth, that it deprives our own writers, to a great extent, of pecuniary inducements to labor. The question is one to be decided, however, by the laws of morality rather than expediency, and the majority of educated non-interested parties agree that the passage of an international copyright law would be an act in accordance with the dictates of common honesty and justice.

Undoubtedly, the cheapness and abundance of these republications have done much to diffuse knowledge among our practitioners, and the libraries of many physicians have been mainly composed of the "pepper and salt sheepskin covered Philadelphia reprints." Of late years there has been a marked improvement in the quality of paper and typography of our medical books, while the stout bindings of sheep and calf of fifty years ago, have been largely superseded by the more showy, but, at the same time, more flimsy cloth bindings now in vogue. The German fashion of publication in parts has been almost unknown, except as connected with periodicals, and it is to be hoped that it may be long before the annoyance and confusion which attends the *Lieferung* and *Hefte* may be connected with our medical publications. "*The American Clinical Lectures*," edited by E. C. Seguin, and published by G. P.

Putnam & Sons, look in this direction most unpromisingly, and the publication of such totally unconnected papers, in a series of continuous paging, even if special paging is added, must be unhesitatingly condemned by all who have occasion to either make or to verify bibliographical references to them.

It may be of interest to refer to some statistics of the locality of publication of these works. Of class one (I) we find that three hundred and seventy-three (373) first editions were published in Philadelphia, one hundred and seventy-three (173) in New York, eighty-one (81) in Boston, twenty-four (24) in Cincinnati, sixteen (16) in New Orleans, and fifteen (15) in Baltimore, leaving ninety-six (96) published elsewhere. If each edition be reckoned as a separate work, we find that six hundred and thirteen (613) have appeared in Philadelphia, two hundred and twenty-six (226) in New York, ninety-six (96) in Boston, and eighteen (18) in Baltimore. Of the reprints and translations, six hundred and eighteen (618) books, or seven hundred and fifty-three (753) editions have been issued from Philadelphia, one hundred and seventy-seven (177) books, or two hundred and nineteen (219) editions from New York, eighty (80) from Boston, and ninety-four (94) elsewhere. It appears then that more than one-half of our medical books have been published in Philadelphia, and about one-fifth in New York. The firm of Carey, Lea & Carey, now H. C. Lea, has published nearly six hundred editions of medical works; and those of Lindsay & Blakiston, and Lippincott, each between one and two hundred. In New York, the principal publishing house is that of S. S. & W. Wood, now Wm. Wood & Co., which has issued about one hundred and fifty (150) editions.¹

Medical Journals.—It is not in text-books or systematic treatises on special subjects that the greater part of the original contributions to the literature of medicine have been first made public during the last century, either in this or other countries. Since the year 1800 medical journalism has become the principal means of recording and communicating the observations and ideas of those engaged in the practice of medicine, and has exercised a strong influence for the advancement of medical science and education.

To this class of literature this country has contributed a noteworthy share. Excluding those devoted to dentistry, pharmacy, popular hygiene, and "isms" of various kinds, we find that one hundred and ninety-five medical journals have been commenced in this country, including reprints of foreign journals, making in all one thousand six hundred and thirty-seven volumes, or a greater bulk than the text-books and monographs.

Prior to the establishment of medical periodicals, there was little or no encouragement or opportunity for a physician to record his observations. The professor in a medical school might, in an introductory notice to the thesis of one of the students—the so-called programma or propempticon inaugurale—make a statement, not to exceed sixteen pages upon any subject, whether connected with that treated of in the thesis or not, and sometimes such a paper was continued through the programmata of twenty or thirty different dissertations, making it very difficult at the present day to secure the entire work.

¹ The figures of this distribution among publishers are only an approximation, and are probably too small, since the publishers' names are not stated in many of the lists of books from which titles have been derived.

But if the country doctor had a communication to make to his brethren, he must either do it by a pamphlet printed at his own expense, or must forward it to some one connected with a medical school or scientific association, and trust to him that it should be made known and recorded. The professors themselves, as was natural, gave the greater part of their thought and labour to their systems, theories, and commentaries.

It was the day of large books, and unless one could produce a volume, he received little encouragement to write. At the present day, the demand for brief papers and reports of single cases, exceeds the supply.

The weekly and monthly periodicals are omnivorous and insatiable in their requests for contributions. Through the medical journals have been given to the world nearly all the discoveries which the science and art of medicine owes to American physicians. They furnish the original data which are the foundations of monographs and text-books, and their files remain interesting and valuable when the latter have become obsolete and are forgotten.

Medical journalism in the United States presents some peculiarities, although not nearly so many as is commonly supposed, and has been the subject of severe, and, to some extent, merited criticism; but while it includes some of the worst, it also contains the best of our medical literature, and some details as to its rise, progress, and character, may therefore be of interest.

The first medical journal printed in this country was a selection and translation from the "*Journal de Médecine Militaire*," issued in Paris from 1782 to 1788. This translation was published in New York about 1790, forming a volume of one hundred and twenty pages 8vo., which is quite rare.¹ The original journal from which this is made up is one that is valuable to the army surgeon; and the reprint is here referred to as being the first medical journal printed in the United States, and because the fact of its existence is probably known to very few.

The first American medical journal was a quarterly, "*The Medical Repository*," edited by S. L. Mitchell, Edward Miller, and E. H. Smith, and published at New York, from 1797 to 1824. That this met an existing want is shown by the fact that the demand for the earlier volumes was sufficient to warrant the issue of a second edition of the first and second volumes in 1800, and a third edition of the same volumes in 1804-5.

Dr. Elihu H. Smith, the projector of this journal, was born in Connecticut in 1771, graduated at Yale in 1786, and died in 1798. Although so young, he had edited several works, and contributed largely to literary periodicals, as well as to his own medical journal.

Dr. Samuel L. Mitchell, 1764-1831, studied under Dr. Bard, and graduated in medicine at Edinburgh, in 1786. As Professor of Chemistry and Natural History in Columbia College, and from 1820 to 1826 of *Materia Medica* and Botany, chief editor of the "*Medical Repository*," representative in Congress in 1801-4, and 1810-13, and United States Senator, 1804-9, he lectured and wrote upon almost all subjects, and his papers are scattered through various periodicals at home and abroad. He was rather a naturalist than a physician, and has very properly been called a "*Chaos of Knowledge*."

Dr. Edward Miller, 1760-1812, was a native of Delaware, and a gradu-

¹ "A Journal of the Practice of Medicine, and Surgery and Pharmacy in the Military Hospitals of France. Published by order of the King. Reviewed and digested by M. De Horne, under the inspection of the Royal Society. Annotated from the French by Joseph Brown. No. I., vol. i., New York: J. McLean & Co."

ate of the Medical Department of the University of Pennsylvania in 1789. In 1807 he accepted the chair of the Practice of Physic in the College of Physicians and Surgeons, and in 1809 was appointed one of the Physicians to the New York Hospital. His writings were collected and published in one volume in 1814, the most important being his papers on Yellow Fever.

The idea of the publication of the "Medical Repository" was probably taken from the "Annals of Medicine" of Duncan, a continuation of the "Medical and Philosophical Commentaries of Edinburgh," and of which the "Edinburgh Medical Journal" of the present day is the successor. Although, owing to the tastes of Dr. Mitchell, it contains many dissertations which are now obsolete, the entire set of twenty-three volumes is even to-day well worthy of a place in the physician's library. At its close its subscribers passed to the "New York Medical and Physical Journal," and from that time, New York city has never been without a medical periodical.

Thirty-one medical journals have been commenced in that city, besides nine devoted to specialties, and six reprints of foreign journals. The most important of these, in addition to those already named, are the "American Medical and Philosophical Register," edited by Drs. Hosack and Francis, 1810-14; the "New York Medical Magazine," edited by Mott and Onderdonk, the "New York Journal of Medicine and Surgery," 1839-41, one of the best journals in this country, edited by Drs. Watson and Swett, the "New York Journal of Medicine," edited by Forry, Lee, Stephen Smith, and others, continued as the "American Medical Times," of which the "Medical Record" of to-day may be considered as the representative; the "New York Medical Journal," edited successively by Drs. Hammond, Dunster, and Hunter, 1865-76, and the "Archives of Scientific and Practical Medicine," edited by Brown-Séquard, 1873, which unfortunately ceased with its fifth number. The "Buffalo Medical Journal," edited by Dr. Austin Flint, 1845-60, and then merged in the "American Medical Monthly," is also a valuable series.

The second medical journal published in this country was the "Philadelphia Medical Museum," edited by Dr. Coxe, 1804-1811, followed almost immediately by the "Philadelphia Medical and Physical Journal," edited by B. S. Barton, and published at irregular intervals, 1804-1809. This journal, as was to be expected from the tastes of its editor, contains a large proportion of articles on natural history. Other well-known journals published in Philadelphia are the "American Medical Recorder," a quarterly, 1818-29, whose subscription list passed to the "American Journal of the Medical Sciences;" the "North American Medical and Surgical Journal," 1826-31; the "Medical Examiner," 1838-56, which united with the "Louisville Review," forming the "North American Medico-Chirurgical Review," 1857-61; the "Medical and Surgical Reporter," 1856-76; the "Photographic Review of Medicine and Surgery," 1870-72; and the "Philadelphia Medical Times," 1870-76.

The most important journal on our list is the "American Journal of the Medical Sciences." This began as the "Philadelphia Journal of the Medical and Physical Sciences," in 1820, under the editorship of Dr. N. Chapman, who is said to have undertaken it under the stimulus of the phrase of Sidney Smith, so often quoted during the past year: "Who reads an American book?" In 1825 a new series began, edited by N. Chapman, W. P. Dewees, and J. D. Godman. This continued until 1827, when Dr. Isaac Hays, who had been associate editor in the last volume—number five of the new, or fourteen of the whole series—took charge of the Journal

and gave it its present name. The ninety-seven volumes of this Journal need no eulogy. They contain many original papers of the highest value; nearly all the real criticisms and reviews which we possess; and such carefully prepared summaries of the progress of medical science, and abstracts and notices of foreign works, that from this file alone, were all other productions of the press for the last fifty years destroyed, it would be possible to reproduce the great majority of the real contributions of the world to medical science during that period. It is evident that its editor has exercised a careful supervision over every part, but his personality is nowhere apparent, there being no editorial articles, and very few papers appearing over his signature.

Baltimore produced the third of our medical journals, the "Baltimore Medical and Physical Recorder," edited by Dr. Tobias Watkins, 1808-9. This only reached number one (1) of the second volume, and it is somewhat curious that of the ten medical journals and one reprint which have been commenced in that city, the duration of each has been comparatively brief. One little known may be referred to, "The Baltimore Philosophical Journal and Review," edited by Dr. J. B. Davidge, of which one number was published in 1823. It contains "a memoir on fractures of the thigh-bone," and "a case of extirpation of the parotid," each by the editor.

The first medical periodical published in Boston was of a popular character, "The Medical and Agricultural Register," 1806-7. The "New England Journal of Medicine and Surgery" began as a quarterly in 1812, and in 1828 was consolidated with the "Boston Medical Intelligencer," and became a weekly, forming "The Boston Medical and Surgical Journal," which has continued to the present time. The original quarterly was well edited, and contains some valuable papers. Under the editorship of Dr. J. V. C. Smith, which lasted for over fifty volumes, it would seem that no articles were ever refused admission to the weekly. As stated by Dr. Hunt,¹ "John C. Warren and X. Chabert were received with equal courtesy. In its department of reviews it was most complacent. From Rokitansky to Mrs. Joel Shew all were erudite. On its editorial pages nothing was attacked, everything was conciliated. Legitimate medicine was right to be sure, but the community would appreciate it better if it were not quite so right. Contributors of merit dropped off, and the journal became the receptacle of more 'remarkable cases' than any other was ever blessed with." From the date of this criticism there has been great improvement, and it is to-day one of the best.

The first medical journal west of the Alleghanies was the "Western Quarterly Reporter of Medical, Surgical, and Natural Science," edited by John D. Godman, Cincinnati, 1822-23, which reached number two of the second volume. This was followed by the "Ohio Medical Repository," edited by Guy W. Wright, issued semi-monthly, Cincinnati 1826-27. This has become one of the rarest of American medical journals. The only articles of interest which it contains are a series of papers by Dr. John Locke, on the Medical Botany of the West, and a few reports of cases and contributions to pathological anatomy, by Dr. John P. Harrison. (This journal must not be confounded with another of the same name, published at the same place, in 1835-36.) It was merged into the "Western Medical and Physical Journal," edited by Drs. Daniel Drake and Wright.

¹ Buffalo Medical Journal, 1856, xii. p. 312.

At the end of the first volume, in 1828, the editors agreed to disagree, and Dr. Wright published one number of a second volume, but the real continuation was issued by Dr. Drake, under the title of the "Western Journal of the Medical and Physical Sciences." This contained some of Dr. Drake's best and most characteristic writings, and forms a valuable and interesting series.

Two attempts were made by Dr. Eberle to establish a journal at Cincinnati; the first, the "Western Medical Gazette," after one or two suspensions, ceased with the second volume, in 1835; the second, the "Western Quarterly Journal of Practical Medicine," 1837, did not get beyond the first number. "The Western Lancet," edited by L. M. Lawson, continued from 1842 to 1857, when it took the name of "The Cincinnati Lancet and Observer," which is still flourishing. Several medical journals were started at Columbus, only one of which, "The Ohio Medical and Surgical Journal," 1848-64, was successful. A rare medical periodical and curiosity in its way is "The Belmont Medical Journal," published at Bridgeport, Ohio, under the auspices of the Belmont County Medical Society, 1858-60. With this belong the transactions of the same society from 1847 to 1857, forming in all, three small volumes in 12mo. These publications are unique in their way, and illustrate what can be done by a county medical society, composed entirely of country practitioners. They contain some amusing flights of rhetoric, and some well-recorded cases, and many of the papers are interesting because it is evident that they were written precisely as the authors talked.

The first medical journal of Kentucky was the "Transylvania Journal of Medicine," a quarterly, published at Lexington, from 1828 to 1839, forming a series of twelve volumes, of which complete sets are rare and valuable. In 1840 commenced "The Western Journal of Medicine and Surgery," Louisville, 1840-55, which may be considered as a continuation of Dr. Drake's "Western Journal," above referred to, combined with the "Louisville Journal of Medicine and Surgery," edited by Drs. Yandell, Miller, and Bell, in 1838, and of which but two numbers were published.

"The Richmond and Louisville Medical Journal," now in course of publication, edited by Dr. E. S. Gaillard, 1868-76, is a continuation of the "Richmond Medical Journal," published at Richmond, Va., 1866-68. "The American Practitioner," edited by Drs. D. W. Yandell and T. Parvin, 1870-76, is a continuation of the "Cincinnati Journal of Medicine," commenced in Cincinnati in 1867.

"The Illinois Medical and Surgical Journal" commenced at Chicago in 1844, and has continued to the present time under various names, being now known as "The Chicago Medical Journal and Examiner."

The first journal published west of the Mississippi was "The St. Louis Medical and Surgical Journal," founded by Dr. M. L. Linton, in 1843, which is still in existence.

In the South the first medical periodical was the "Journal de la Société Médicale de la Nouvelle Orleans," a quarterly, published in 1831. A monthly journal of the same name appeared in 1859-61. The most important is the "New Orleans Medical and Surgical Journal," which, with two suspensions, has continued from 1844 to the present time. "The Southern Medical and Surgical Journal," edited by Anthony Eve and others, published at Augusta, forms a series of twenty-one volumes,

which contain many valuable cases, papers, and reports. "The Charleston Medical Journal and Review," 1846-60, and 1873-76, is the principal medical periodical of South Carolina.

In Tennessee, "The Nashville Journal of Medicine and Surgery," 1851-61, and 1866-76, and "The Southern Journal of the Medical and Physical Sciences," 1853-57, are worthy of note.

The principal medical journal in Virginia was "The Virginia Medical and Surgical Journal," edited by G. A. Otis and others, Richmond, 1853-61. In the same city was published, during the war, "The Confederate States Medical and Surgical Journal," 1864-65, a quarto sheet containing much valuable data in military surgery. Complete files of this are very rare.

On the Pacific coast eight medical journals, in all, have been commenced, two of which did not get beyond the first number. The oldest one now in existence is "The Pacific Medical and Surgical Journal," which began in 1858.

Five medical journals have been commenced in Michigan, two of which are now in existence.

Connecticut, Iowa, Maine, Minnesota, New Hampshire, New Jersey, Oregon, Vermont, and West Virginia have each had one journal, all of which are now extinct except "The West Virginia Medical Student." Perhaps two may be claimed from Maine, counting "The Journal of the Medical Society of Maine," one number of which was issued at Hallowell in 1834.

Of journals devoted to dentistry there have been about twenty, making one hundred and thirty volumes in all.

The earliest one was the "American Journal of Dental Science," which commenced in New York, in 1839, was suspended from 1860 to 1867, and is still in existence.

In 1876 there are four dental journals in existence in this country, while England has but one, France two, and Germany one.

Of journals devoted to pharmacy, there have been six worth mentioning; the oldest being the present "American Journal of Pharmacy," which began in 1825, as the "Journal of the Philadelphia College of Pharmacy." This journal is by far the most valuable of this class in this country, and is furthermore noteworthy, and to be specially commended for having done what no medical journal in this country has accomplished, namely, the publishing of a complete index for its series, which was done in 1873, and which doubles the practical value of the set. The total number of volumes published of this class is ninety-four.

Besides the regular encyclopedic medical journals, there have been about as many more devoted to "isms" and "pathies," and to popular and family medicine and hygiene, many of these last being merely advertisements.

With the recent development of specialties in medicine, several journals devoted to particular subjects have appeared, and an increase in the number of these may be expected.

In this connection may be mentioned, as a curiosity in literature, a periodical publication devoted to the abuse of an individual physician, namely, the "Rush Light," published in New York in 1800, by William Cobbett, under the pseudonym of Peter Porcupine, for the vilification of Dr. Benjamin Rush. Seven numbers were issued, of which only the first two bore the imprint of place of publication, the last two were printed in London, and a complete set is very rare.

A most powerful agent for the diffusion in this country of the knowledge of the labours and writings of European physicians, has been the republication of the principal English Quarterly Reviews, of "Braithwaite's Retrospect," and of "Ranking's Abstract." To this should be added, perhaps, the so-called "American Edition of the London Lancet," which is a selection rather than a reprint, and the subscription list of which was at one time very large.

Of journals printed in foreign languages, there have been commenced, three in German, three French, and one Spanish. The French journals were all issued at New Orleans: two of the German journals appeared in the State of New York, and one in Philadelphia.

The Spanish journal was intended mainly for circulation in Cuba.¹ Its issue ceased with the third number.

Our medical journals vary so much in character, style, and purpose, that it is hardly possible to make any assertion with regard to the mass which shall be at the same time broad and true. They may be divided into three classes: first, those not connected with any medical school, and which draw their contributions from a wide field, including such as the "American Journal," "The New York Journal," "The Medical Record," "The Medical Times," and "The Boston Medical and Surgical Journal;" second, those which rely for contributions and material mainly on the professors of a medical school and the hospital clinics connected with it, but which are not specially devoted to its interests; third, those which are mainly devoted to advocating the interests of a school, and the attacking rival institutions, and which are, to use Carlyle's phrase, "Windmills put out to catch or take advantage of the wind of popular favour." These journals sometimes contain valuable reports of cases obtained from the college clinics, but the personal editorial element in them is usually in excess, and they are of interest to but a small local circle. To them applies the untranslatable French criticism, "*Il y a trop de tintamarre la dedans, trop de brouillamini.*"

Of the first class, some compare favourably with the best of the journals of other countries: of the last class, some are as bad as, but not worse than, the worst. Comparatively few persons are acquainted with the poorer class of foreign medical journals, published in the smaller towns of the provinces, which have most of the defects which are so strongly condemned in some of our own publications as if they were unique.

The reports to the American Medical Association, by its committees on American Medical Literature, devote much space to periodicals, and contain many judicious criticisms upon their defects and errors. A common complaint is that there are too many. The reply to this is usually that of Dr. Drake, that it is desirable that the country practitioners be induced to write, and that one means of doing this is the diffused localization of journals. This is due to the fact that inexperienced and modest men will furnish an article or report to a journal in their immediate neighbourhood, with whose editor they are personally acquainted, while they would not do so to one at a distance.

The number of subscribers to the greater number of our journals is small, the issue being, for many, less than a thousand, and, for some, hardly five hundred copies.

¹ "Revista Medico-Quirurgica y Dentistica." Quarterly. New York and Havana, 1868.

The motive for the existence of the minor journals is not for direct profit, but as an indirect advertisement for certain individuals, or—and this is more common—the desire to have a place in which the editor can speak his mind and attack his adversaries without restraint. The defects in the medical journals are, to a certain extent, the characteristic ones in our medical literature, and are chargeable mainly to the lack of general education and mental culture in the majority of readers whose tastes are to be accommodated. An urgent want of many of the subscribers is a sort of continuation of the course of education given in the schools. We find, for instance, in the pages of some medical journals, articles which make no pretensions to originality, but are simply didactic lectures to a class *in absentia*. The defects in the so-called original contributions are, for the most part, due to imperfect education in the writers, and betray, not merely an ignorance of facts previously ascertained and recorded, but defective mental training and an inability to comprehend the relations of the facts which are known, the result of which is the stringing out of a series of irrelevant and tedious details, and, in the attempts at deduction, the production either of vague and valueless generalizations, or conclusions which do not follow from the premises. As an illustration, take the majority of the articles which have appeared on a disease which would seem to be peculiar to this country, viz., the so called “milk-sickness” or “trembles.”

Since the first notice on this affection in Dr. Drake's Notices of Cincinnati, in 1809, there have been printed four pamphlets and one hundred and ten (110) articles in journals and transactions, on this subject. Yet it cannot be said to-day, that we have any definite knowledge as to the pathology or causes of this affection, or that, so far as man is concerned, we are absolutely certain that there is any special disease which should be thus named, as being caused by the milk, or flesh of cattle affected with the “trembles.” It has been said to be caused by certain plants, yet no scientific experiments have been made on the effects of these plants. No attempt has been made to produce the disease in an animal remote from infested localities, by the use of the suspected plants, or better, by the use of an extract containing their active principles; no chemical or microscopical examinations have been made, in short, we have nothing but an account of symptoms, and much of that is from hearsay.

Many articles intended to be practical, are very far from being such, although the authors would probably be surprised and indignant to hear them termed otherwise. They profess to give the results of the writer's personal experience with a certain disease, but this disease is only named, not described, and the gross results only are given, that is to say, we are told how many recovered. The object of such writers, to use their own words, is to tell us “what is good for biliousness, or low fever, or pneumonia.” Their productions read curiously, like the literature of the last century, and are to be classed with old women's advice; amusing generally; practically suggestive sometimes; clear, scientific, and conclusive, never.

The so-called clinical lectures, and reports of cases and operations, are of two kinds. When properly prepared they are most useful and valuable, and are the best contributions to a journal which the majority of physicians can make, although by no means the highest class of medical literature. But a large number of such articles as are pub-

lished, are simply padding, worse than useless, since their titles become a part of the bibliography of medicine, compelling each succeeding inquirer to refer to them, or risk the loss of some really valuable reference.

We have reached that stage of development, when it is in no way desirable that we should be informed that one dislocated shoulder was reduced, one leg amputated, and two hare-lips operated upon, not even if the usual text-book explanations are added, so as to make up the five or six pages of the report of a college clinic. We have had enough reports of specimens of "Aneurism of the Aorta," or "Medullary Sarcoma," or "Tumour of the Breast," in which little or no information is given with regard to the symptoms during life, and the principal fact stated is the size or weight of the specimen.

It is a useless case of labour which lingers through three or four pages, to terminate in the usual manner with the stale old moral about "meddlesome midwifery," and it is at once amusing, exasperating and pathetic, to glance over the "contributions from the clinic" of the young specialist who has set to work to write himself into notice, not in a journal devoted to his specialty, but in one of the encyclopedic periodicals, having been instructed that this is "legitimate advertising."

"Medical journalism is not a profession in this country. With one or two exceptions, our medical editors are engaged in practice and lecturing, and their labour in connection with the journals is not directly remunerative, nor is it the main object of their thoughts." The result of this appears in that large section of almost every journal which is devoted to reviews, abstracts, news items, etc. Nevertheless, as we have before stated, our medical journals are the most important and valuable part of our medical literature, and it is mainly in and by them that improvement may be hoped for and effected.

At the beginning of 1876, there were in course of publication throughout the world about 280 regular medical journals. Of this number, Germany and Austria had 57; France 52; Great Britain, not including her Colonies 29; the United States 46; Italy 31; Belgium 8; Mexico 8; Canada 7; Holland 6; Spain 6. As to the form of publication, the United States has the largest proportion of monthlies, and France and Germany of weeklies and bi-weeklies.

The proportion of periodical to other forms of medical literature is in excess in this country, as will be clearly seen if we compare the number of medical books published in the several countries. Taking the "*Bibliotheca Medico-Chirurgica*," of Ruprecht, for the years 1874-75, and counting the publications noted in it, excluding journals, pamphlets, and popular and irregular works, we find that the United States is credited with 55 volumes; England 179; France 409; Germany 419; Italy 120; Spain and Portugal 104. If we count only first editions of original works, we find that the United States has published during these two years 36; England 92; France 314; Germany 288; Italy 88; and Spain and Portugal 30.

These figures are, of course, not exact, but the proportions shown are probably nearly correct. Taking the number of volumes of medical publications of all nations, excluding journals, for these two years, the United States has published about six per cent. of the whole, certainly not the quantity which should have been produced if everything was as it should be.

Medical Societies.—An important influence upon the progress of medicine, and the relations of physicians to each other, and to the public, has been exerted by our medical societies, some of which date from the last century, and which are found almost everywhere. The first State medical societies, such as those of New Jersey, Massachusetts, Delaware, New York, etc., were charged with the duty of licensing persons to practise medicine, to which license an examination was a necessary preliminary. In this way these societies were the principal agents in fixing the standard of medical education, and although after the establishment of medical schools the diploma of one in good repute was accepted in lieu of an examination, this was by courtesy rather than law, and made it necessary that the standard of the schools should at least be equal to that prescribed by the society. For convenience of reference, we give a list of the most important medical societies of the United States, arranged in alphabetical order by States:—

	Organ- ized.	First publica- tion.	No. of vols. of publica- tions.
American Medical Association	1847	1848	27
American Ophthalmological Society	1864	1865	7
American Otological Society	1868	1869	1
American Pharmaceutical Association	1852	1852	24
American Public Health Association	1872	1875	1
National Quarantine and Sanitary Convention	1857	1857	4
Medical Association of the State of Alabama	1847	1848	19
State Medical Association of Arkansas	1870	1871	5
Medical Society of the State of California	1870	1870	5
Territorial Medical Society of Colorado	1871	1872	5
Connecticut State Medical Society	1792	1844	20
Medical Society of Delaware	1789	.....	...
Medical Society of the District of Columbia	1833	1874	2
Clinico-Pathological Society of Washington	1865	.....	...
Florida Medical Association	1874	1875	1
Georgia Medical Association	1849	1850	20
Georgia Medical Society of Savannah	1804	.....	...
Illinois State Medical Society	1851	1851	23
Drake Academy of Medicine	1872	1874	1
Indiana State Medical Society	1849	1849	27
Iowa State Medical Society	1850	1850	10
Medical Society of the State of Kansas	1858	1867	2
McDowell Medical Society	1874	1875	1
Kentucky State Medical Society	1851	1851	19
Société Médicale de la Nouvelle Orleans	1812	1831	3
Medical Society of the State of Maine	1834	1834	1
Maine Medical Association	1853	1853	6
Medical and Chirurgical Faculty of Maryland	1789	1853	4
Boston Society for Medical Improvement	1828	1853	5
Boston Society for Medical Observation	1846	.....	...
Boylston Medical Society	1811	70 prize essays published in journals.	
Gynæcological Society of Boston	1869		5
Massachusetts Medical Society	1781	1790	41
Michigan State Medical Society	1819	1850	15
Minnesota State Medical Society	1855	1870	6
Medical Association of the State of Mississippi	1856	1870	1
Medical Society of the State of Missouri	1850	1850	12
Nebraska State Medical Society	1868	1869	6
New Hampshire Medical Society	1791	1854	21
New Jersey State Medical Society	1766	1859	17
Medical Association of Southern Central New York	1847	1848	11

	Organ- ized.	First publica- tion.	No. of vols. of publica- tions.
Medical Society of the County of Albany	1806	1864	2
Medical Society of the County of Kings	1822	1858	2
Medical Society of the County of New York	1806	.....	...
Medical Society of the State of New York	1807	1808	34
Medico-Legal Society of New York	1867	1874	1
New York Academy of Medicine	1847	1851	8
New York Medical Journal Association	1864	.....	...
Pathological Society of New York	1844	.....	...
Physico-Medical Society of New York	1815	1817	1
Medical Society of the State of North Carolina	1850	1850	22
Academy of Medicine of Cincinnati	1857	.....	...
General Medical Society of Ohio	1827	1829	2
Medical Convention of Ohio	1835	1835	13
Ohio State Medical Society	1846	1850	26
Belmont Medical Society	1847	1848	8
Medical Society of the State of Oregon	1874	.....	...
College of Physicians of Philadelphia	1787	1793	11
Medical Society of the State of Pennsylvania	1848	1851	18
Pathological Society of Philadelphia	1857	1869	4
Philadelphia County Medical Society	1849	.....	...
Philadelphia Obstetrical Society	1868	1873	3
Rhode Island Medical Society	1812	1859	1
Medical Society of South Carolina	1789	.....	...
South Carolina Medical Association	1848	1849	16
Tennessee State Medical Society	1830	.....	...
Medical Association State of Texas	1869	1869	4
Medical Society of the State of Vermont	1814	1864	4
Medical Society of Virginia	1821	1871	5
Medical Society of Washington Territory	1873	1873	3
Medical Society of the State of West Virginia	1867	1868	8
Wisconsin State Medical Society	1842	1856	9

The formation of the American Medical Association was due to a wide spread and loudly expressed dissatisfaction on the part of the leading physicians of the country, with the low standard of medical education, and to a general conviction that the remedy for this lay neither with the schools nor the State medical societies. It was hoped that by forming an association which should represent all parties interested, a sufficient pressure of opinion might be brought to bear upon physicians and upon the schools, to secure the return to the requirements for graduation of the earlier medical colleges. After one or two futile attempts, the New York State Medical Society set on foot a movement which resulted in a meeting of a convention in the city of New York, in the year 1847, in which were present representatives of medical societies and colleges from sixteen States. A similar convention met the following year in Philadelphia, at which the title, by which it is now known, was assumed. The series of its annual volumes of transactions contains some reports and papers of much value and interest, mingled with much that is unworthy of publication under the auspices of our National Medical Society, or indeed of any other. Many of the reports of the chairmen of the several committees are of permanent historical value. Its most valuable contribution to our literature, has been the publication of a code of ethics, which is, theoretically at least, accepted as authoritative throughout the United States, and which, although some of its provisions have been objected to, is, as a whole, the most satisfactory exposition in existence of the proper relations of physicians to each other, and to the public.

Of late years, the original purpose of this association has been to some extent departed from.

It was not primarily intended to promote literature or scientific research, or to afford a means of publication for writers. Our national and State medical societies have been mainly useful as social gatherings, promoting acquaintance, and the feeling of professional brotherhood and *esprit de corps* among their numbers, and as giving the means for agreement, and the expression of opinion, upon questions relating to education, ethics, etc.; by that large body of physicians engaged in general practice, who do not write or lecture, but simply vote. As sources of addition to the science and literature of medicine, they do not play a conspicuous part, nor is it easy to see how it can be otherwise; the real discovery, the carefully prepared paper, the description of a new symptom, pathological appearance or remedy are not usually communicated to such societies. No effectual supervision as to quality of papers which may be read or printed can, or at least will be exercised by committees, and a communication which a first class medical journal has "declined with thanks," may be taken to the State, and even to the National Society with a reasonable certainty that it can be made to appear in the transactions. The discussions on papers in such associations seldom have any scientific value, from want of special preparation on the part of the speakers, although they are sometimes amusing, and, to use an expressive word, "spicy," from the use of personalities. Whether this state of things can be improved is doubtful, though attempts to do so are of course commendable.¹

The journals have to a great extent superseded the necessity of using societies as a means of publication, and the best work of such associations seems to consist in bringing the leaders into personal relation with the mass of the profession, and in serving as courts of arbitration and appeal, where local difficulties can be adjusted, and whose decisions will command the assent of the majority of their members.

The Transactions of the New York State Medical Society were, for a number of years, published by the State, which proved, upon the whole, to be not a desirable mode of issue, and the last volume, published by the society itself, is a great improvement upon its predecessors. What such societies might do is shown by the paper of Dr. Thomas C. Brinsmade, giving an accurate record of his practice for twenty-one years. This makes 300 pages of the volume of the Transactions of the New York State Medical Society for 1858, and contains carefully analyzed statistics of 37,872 cases. This had been preceded in 1851 by an elaborate account of the medical topography of the city of Troy, his place of residence. Taken together, these papers are very valuable, and set an example of a mode of adding to the store of medical knowledge, which is within the power of every practitioner.

An interesting experiment is now in course of trial in Alabama, where the State Medical Society has been made the State Board of Health, and the official adviser of the Legislature in all matters pertaining to public hygiene.

¹ The best suggestion to this end for the American Medical Association which I have heard is that each section should elect its own officers and members, and should be managed by a special committee who shall designate the subject for discussion, and the leaders in debate. If the members of the committee each year are selected from a single city, it would have an additional advantage. For instance, let the managing committee of the surgical section be, this year, all residents in New York city, while Boston takes obstetrics, Philadelphia practice, etc. The next year New York can take practice, Chicago surgery, etc. In other words, transfer all the responsibility for scientific work to the sections, and let these sections be organized and managed systematically to that end alone.

The American Public Health Association, organized in 1872, may now be considered as fairly established. The operations of this society have special interest to the medical profession, since it may become an important means of educating the public, and enabling it to distinguish between the scientific physician and the ignorant pretender.

We have another class of medical societies which require an abundance of clinical and pathological material; members actually engaged in original investigations, and frequent meetings, as conditions for usefulness and success. As a rule, these can only exist in large cities, where they exert a powerful influence and stimulus to exertion on their individual members. It must be admitted that our societies of this kind seldom bring out the best work of their members, and that such discussions as occur in similar societies in London and Paris, continued week after week, and even month after month, for which elaborate preparation is made by the speakers, and in which the results of clinical observation and extensive literary research are rendered attractive and striking, by splendor of diction and perfection of style, are very rare.

The most important of these societies are the College of Physicians of Philadelphia, the New York Academy of Medicine, the pathological societies of Philadelphia and New York, the Boston Society for Medical Improvement, and certain societies devoted mainly to specialties. Among these should be mentioned the Medico-Legal Society of New York, organized in 1867. In 1874 it published a volume of papers relating to medical jurisprudence, which will be followed by others. It is also forming a valuable library in its own department, and has been the means of bringing the members of the medical and legal professions of New York to better acquaintance with each other. It is but justice to say that much of its good work and prosperity is due to the energy of its late president, a prominent lawyer, Mr. Clark Bell.

The majority of our physicians are, and must be, content to leave to a few special workers the labour and pleasure of sifting and selecting from the original sources of medical literature, having neither the wish nor the power to examine for themselves the works of the great leaders and teachers of times past, or the mass of books and pamphlets which are daily streaming from the press; but there is nevertheless among them a fair amount of appreciation of the value and necessity of such work, and of the usefulness and desirability of collections of the records of their science. During the last ten years, the writer has had occasion to examine many private libraries of physicians in all parts of the country, in country villages as well as the large cities, and it has been a matter of surprise and pleasure to find so much interest taken in subjects relating to the history and bibliography of medicine by men remote from large libraries, and without the stimulus of companionship in, and sympathy with such tastes. And it will usually be found that the physician who has on his shelves half a dozen old folios and quartos, including perhaps copies of Sydenham, Morgagni, and Van Swieten, is a man of more culture and broader views than the one who has only the modern manuals, or rather those which were modern when he attended lectures.

Until recently few of our writers have made much use of bibliographical research. We now have public medical libraries in this country, which afford to the student and scholar good facilities for research, and which bid fair, at no distant day, to rival in magnitude and practical working value, if not in manuscripts and incunabulæ, the best in the old world.

Philadelphia has several libraries of much interest and value to the medical bibliographer and scholar. The oldest medical library in this country is that of the Pennsylvania Hospital, founded in 1762, and now containing about 13,000 volumes, many of which were selected for the hospital by Doctors Lettsom, in London, and Louis, in Paris. Its classified catalogue, issued in 1857, is a valuable work of reference.

The library of the College of Physicians, of Philadelphia, which dates from 1788, now contains about 19,000 volumes well selected, receives about eighty current journals, and, next to the library at Washington, is the most valuable collection of the kind in this country. Much of its prosperity and excellence is due to Doctor Samuel Lewis, whose donations, amounting to several thousand volumes of choice books, are kept in a room by themselves, and known as the "Lewis Library." The great want of this library is a good printed catalogue, which would double its value and usefulness. The medical part of the Loganian Section in the Philadelphia Library contains about 1800 volumes, mostly old and rare. These three libraries supplement each other to a great extent, there being probably not less than 26,000 volumes between them, which are not duplicates. The fourth library is at the University of Pennsylvania, in West Philadelphia, and contains about 3000 volumes, the gift Dr. Alfred Stillé. It may be noted here that almost all attempts to establish medical libraries in connection with medical schools have been failures. Commenced with enthusiasm, they soon become antiquated, are rarely consulted, except by one or two species of beetles, are never properly catalogued or cared for, and dust and mould reign in them supreme. Students and teachers want the newest books and journals only. Libraries are used by the scholar and author, and for such are the true universities.

In New York, the library of the New York Hospital is the largest of its class, containing about 10,000 volumes. An excellent foundation for a library has been acquired by the Academy of Medicine, by the gift from Dr. Purple of a complete file of regular American medical journals and of a large number of rare pamphlets. The collections of journals of the Medical Journal Association of New York, and the German Dispensary are valuable sources of information to the student.

The Boston Public Library has at present the best collection of medical books in that city, numbering about 11,000 volumes, for the most part standard works and periodicals. Its usefulness is much diminished from the want of a good printed catalogue of this section. The library of Harvard College contains between 5000 and 6000 volumes on medicine; and the Treadwell Library, at the Massachusetts General Hospital, has about 5000 volumes. The medical library of most promise in Boston is that of the Medical Library Association, which, though only a year old, has about 3000 volumes, and will probably rapidly increase.

In Cincinnati the City Hospital has a fair collection. The Mussey Medical and Scientific Library, at present, is a special deposit in the Cincinnati public library, and contains about 4000 volumes and 2000 pamphlets.

The National Medical Library at Washington, under the direction of the Surgeon-General of the Army, contains 40,000 volumes, and about the same number of pamphlets. It has been formed within the last twelve years, and the use that is made of it by physicians from all parts of the country, and the general and strong interest that is felt in its progress

affords satisfactory evidence, if such were needed, that it meets a want of the profession. Its subject catalogue is nearly ready for the press.

Besides these public libraries, there are several valuable private collections of medical works in this country, some of which have been already given to public use, such as those of Drs. Purple, Stillé, and Mussey, already referred to. Two others are worthy of special mention, the first being that of Dr. G. J. Fisher, of Sing Sing, which is rich in the classics of medicine; and the second, that of Dr. J. M. Toner, of Washington, which is especially devoted to American medical literature, and contains many rare pamphlets, besides a nearly complete file of American medical journals. In connection with this last, there is nearly ready for the press a complete index. Besides these, there are a number of valuable private medical libraries in this country, ranging from 1000 to 8000 volumes, and the number of foreign works imported, and the taste for original editions is steadily increasing. It is now possible to verify in this country the majority of the references made by European medical authors, and it is no longer necessary to make costly importations, or to visit Europe to obtain literary data.

With the libraries should be classed the *medical museums*, of which several of much interest and importance have been formed in the United States, for the most part in connection with medical societies and hospitals. The catalogues of these collections, when properly prepared, are very useful books of reference, and some excellent work of this kind has been accomplished, such as the Catalogues of the Warren Anatomical Museum of Harvard, and of the Museum of the Boston Society for Medical Improvement, each by Dr. J. B. S. Jackson; of the Pathological Museum of the Pennsylvania Hospital, by Dr. Wm. Pepper; of the Pathological Cabinet of the New York Hospital, by Dr. Ray; and of the Army Medical Museum at Washington, by Drs. Woodhull, Curtis, and Woodward.

The College of Physicians of Philadelphia has a valuable collection, including the Mütter Museum, and a series of unique preparations by Hyrtl.

The practical value of large special museums in connection with good libraries devoted to the same specialities is great, but they are useful rather to the educated physician than to the student; and the numerous small collections which are scattered over the country, in hospitals and private cabinets, are simply so much wasted and unused material, in a scientific point of view, and, though gratifying to the owner as trophies or mementoes, are of little more real use than the strings of teeth which the barbers of old hung out as signs of their skill.

The value of a single specimen of any lesion is usually very small; it is only when they can be brought together by scores and compared that useful and reliable results can be hoped for. As we get older and wiser, we shall probably have fewer journals, medical schools, museums, and libraries than we now possess, for all these means of culture, to have the best effect, require concentration.

Although the permanent importance of oral teaching has, to some extent, been diminished by the diffusion of periodical literature, since the latest discovery or theory can now be promptly made known to those remote from the great centres of learning, the increased use made of clinical instruction, and the necessity for practical demonstration of instrumental methods of diagnosis, have in a great degree compensated for this.

The medical history of a country cannot be considered complete without some account of its *medical schools*, but we have space for little more than a list of those which have flourished in the United States.

The following table gives a list of the regular chartered medical schools of this country, which have had the power of conferring the degree of doctor of medicine, with the date of first graduating class, date of cessation, and number of graduates to the spring of 1876, so far as it has been possible to obtain the data:—

It is possible that a few minor schools of short duration have been overlooked, but such must have been of small importance. No note is made in the list of the various changes of name which some of the schools have assumed. The number of graduates has been obtained by collation of all the catalogues that could be obtained, and by correspondence. From these data an estimate has been made for the missing years, and the limit of error in the total does not probably exceed one-half of one per cent. It should be observed that little reliance can be placed upon many of the catalogues as to the number of students in attendance, and there are some discrepancies even as to graduates.

Name.	Year of first graduation.	Date of cessation.	Total No. of graduates.
<i>Alabama.</i>			
Medical College of Alabama [Mobile]	1860	.....	203
<i>California.</i>			
Medical College of the Pacific, Med. Dept. of University (City) College [San Francisco]	1859	.....	90
University of California, Med. Dept. of (Toland Hall) [San Francisco]	1865	.....	86
<i>Connecticut.</i>			
Yale College, Med. Dept. of [New Haven]	1814	.....	899
<i>District of Columbia.</i>			
National Medical College, Med. Dept. of Columbian University [Washington]	1826	.....	427
Georgetown University, Med. Dept. of [Washington]	1852	.....	387
Howard University, Med. Dept. of [Washington]	1871	.....	37
<i>Georgia.</i>			
Medical College of Georgia [Augusta]	1833	.....	1278
Savannah Medical College [Savannah]	1854	.....	140
Atlanta Medical College [Atlanta]	1855	.....	560
Oglethorpe Medical College [Savannah]	1856	1861	86
<i>Illinois.</i>			
Rush Medical College, Med. Dept. of University of Chicago [Chicago]	1844	.....	1786
Illinois College, Med. Dept. of [Jacksonville]	1848	1848	39
Rock Island Medical School [Rock Island]	1849	1849	19
Chicago Medical College, Med. Dept. of Northwestern University [Chicago]	1860	.....	481
<i>Indiana.</i>			
Indiana Medical College, Med. Depart. of Laporte University [Laporte]	1842	1851	136
Medical College of Evansville [Evansville]	1850	.....	74
Indiana Central Medical College [Indianapolis]	1850	1852	39
Indiana Medical College [Indianapolis]	1870	.....	251
Indiana College of Physicians and Surgeons [Indianapolis]	1875	.....	.....

Name.	Year of first gra- duation.	Date of cessation.	Total No. of gra- duates.
<i>Iowa.</i>			
College of Physicians and Surgeons [Keokuk] . . .	1850	.....	777
Iowa State University, Med. Dept. of [Iowa City] .	1871	.....	111
<i>Kentucky.</i>			
Transylvania University, Med. Dept. of [Lexington] .	1818	1859	1860
University of Louisville, Med. Dept. of [Louisville] .	1838	.....	2395
Kentucky School of Medicine [Louisville] . . .	1851	.....	520
Louisville Medical College [Louisville] . . .	1870	.....	402
Hospital College of Medicine, Med. Dept. of Central University [Louisville]	1875	.....	91
<i>Louisiana.</i>			
University of Louisiana, Med. Dept. of [New Orleans]	1835	.....	1703
New Orleans School of Medicine " " . . .	1857	1870	397
Charity Hospital Medical College of N. O. " " .	1876	.....	10
<i>Maine.</i>			
Bowdoin College and Med. School of Maine [Brunswick]	1821	.....	1137
<i>Maryland.</i>			
University of Maryland, Med. Dept. of [Baltimore] .	1811	.....	3104
Washington University, School of Medicine [Baltimore]	1828	.....	680
College of Physicians and Surgeons " . . .	1873	.....	118
<i>Massachusetts.</i>			
Harvard University, Med. Dept. of [Boston] . . .	1785	.....	2206
Berkshire Medical College, [Pittsfield] . . .	1823	1867	1136
<i>Michigan.</i>			
University of Michigan, Med. Dept. of [Ann Arbor] .	1851	.....	1405
Detroit Medical College [Detroit]	1869	.....	204
<i>Missouri.</i>			
Missouri Medical College [St. Louis]	1841	.....	921
St. Louis Medical College " "	1843	.....	1293
Humboldt Medical College " "	1867	1869	16
Kansas City College of Physicians and Surgeons .	1870	.....	46
St. Louis College of Physicians and Surgeons [St. Louis]	1870	1870	8
<i>New Hampshire.</i>			
Dartmouth College, Medical School of [Hanover] .	1798	.....	1283
<i>New York.</i>			
College of Physicians and Surgeons of the City of New York, Med. Dept. of Columbia College [N. Y. City] .	1769	.....	3179
College of Physicians and Surgeons of the Western District of New York [Fairfield]	1816	1840	585
Geneva College (Rutgers Med. Faculty) [N. Y. City]	1827	1830	104
Geneva Medical College [Geneva]	1835	1872	849
Albany Medical College [Albany]	1839	.....	1287
University of the City of New York, Medical Dept. of [N. Y. City]	1842	.....	3393
University of Buffalo, Med. Dept. of [Buffalo] . .	1847	.....	848
New York Medical College and Charity Hospital [N. Y. City]	1851	1864	310
Long Island College Hospital [Brooklyn]	1860	.....	531
Bellevue Hospital Medical College [N. Y. City] . .	1862	.....	1908
College of Medicine of Syracuse University [Syracuse]	1873	.....	26
<i>Ohio.</i>			
Medical College of Ohio [Cincinnati]	1821	.....	2170
Cincinnati College, Med. Dept. of [Cincinnati] . .	1836	1839	95
Starling Medical College [Columbus]	1836	.....	887

Name.	Year of first graduation.	Date of cessation.	Total No. of graduates.
Cleveland Medical College, Med. Dept. of Western Reserve College at Hudson [Cleveland]	1844	.....	1162
Cincinnati College of Med. and Surgery [Cincinnati]	1852	.....	760
Miami Medical College [Cincinnati]	1853	.....	578
University of Wooster, Med. Dept. of [Cleveland]	1865	.....	328
<i>Oregon.</i>			
Willamette University, Med. Dept. of [Salem]	1867	.....	63
<i>Pennsylvania.</i>			
University of Pennsylvania, Med. Dept. of [Philadelphia]	1768	.....	8845
College of Philadelphia [Philadelphia]	1790	1791	10
Jefferson Medical College "	1826	.....	6668
Pennsylvania College at Gettysburg, Med. Dept. of [Philadelphia]	1840	1861	769
Franklin Med. College of Philadelphia [Philadelphia]	1847	1849	25
Philadelphia College of Medicine "	1847	1859	502
<i>Rhode Island.</i>			
Brown University, Medical School of [Providence]	1814	1826	63
<i>South Carolina.</i>			
Medical School of the State of South Carolina [Charleston]	1825	.....	2439
University of South Carolina, Med. Dept. of [Columbia]	1868	.....	26
<i>Tennessee.</i>			
Memphis Medical College [Memphis]	1847	1873	231
University of Nashville, Med. Dept. of [Nashville]	1852	.....	1741
Shelby Medical College [Nashville]	1859	1861	30
Vanderbilt University, Med. Dept. of [Nashville]	1875	.....	75
<i>Texas.</i>			
Galveston Medical College [Galveston]	1866	.....	123
Texas Medical College and Hospital [Galveston]	1874	.....	38
<i>Vermont.</i>			
Castleton Medical College [Castleton]	1820	1861	1449
University of Vermont and State Agricultural College, Med. Dept. of [Burlington]	1823	.....	573
Vermont Medical College [Woodstock]	1830	1860	575
<i>Virginia.</i>			
University of Virginia, Med. Dept. of [Charlottesville]	1828	.....	533
Medical College of Virginia [Richmond]	1839	.....	947
Winchester Medical College [Winchester]	1846	1862	75
Total			73,588

If we take the number of graduates by decades of years during the present century, the result is as follows:—

Years.	No. of graduates.	Years.	No. of graduates.
1769-1799	221	1840-1849	11,828
1800-1809	343	1850-1859	17,213
1810-1819	1,375	1860-1869	16,717
1820-1829	4,338	1870-1876	14,704
1830-1839	6,849		

The first medical school in this country was established by Drs. John Morgan and William Shippen at Philadelphia in 1765, and is now known as the Medical Department of the University of Pennsylvania. From its

halls have graduated the majority of the distinguished medical writers, teachers, and practitioners of the United States, and the names of its professors have become household words.

Organized upon the plan of the Edinburgh Medical School, of which its founders were graduates, it has been the model and pattern by which all our medical colleges have been shaped. Its largest graduating class was in 1849, numbering 191. In the following year Professor Chapman resigned, and for the next ten years the Jefferson School graduated the greater number, reaching its maximum of 269 in 1854. The Jefferson Medical College was founded in 1824, under the charter of Jefferson College in Canonsburg, Pennsylvania. The first course of lectures was delivered in 1825-26, the Faculty being Drs. Eberle, McClellan, Rhees, Green, and Beattie. Numerous changes were made in professors, and its classes varied much in size until 1841, when all the chairs were vacated and refilled by Drs. Dunglison, J. K. Mitchell, Pancoast, R. M. Huston, Mütter, Meigs, and Bache. This Faculty continued until 1856, when Professor S. D. Gross succeeded Dr. Mütter. In 1857 Dr. T. B. Mitchell took the place of Dr. Huston, and in 1858 Dr. Dickson that of Dr. J. K. Mitchell.

The second medical school founded in this country was at New York, under the charter of King's College, in 1767. This school has had many vicissitudes, but is now in a flourishing condition, and known as the College of Physicians and Surgeons of the City of New York, being the Medical Department of Columbia College. Its largest graduating class was 110 in 1875.

The Medical Department of Harvard University was founded by Dr. John Warren in 1782. Its maximum class of graduates was 99 in 1866. Recently it has led the way in elevating the standard of medical education, by extending its curriculum to three years, establishing a graded course, and by having decided to institute a real examination into the preliminary education of its students. This has of course diminished its classes somewhat, but no one can doubt that the decision to aim at quality instead of quantity is a wise one, and will in the fulness of time receive its due reward.

The first medical school in the West was established in Lexington, Ky. So early as 1799 a Medical Department was added to Transylvania University, Dr. Samuel Brown being appointed the first professor. Various appointments in the Medical Faculty were made, and a few partial courses of lectures were delivered, but the first full course was not given until 1817, and the degree of M.D. was first conferred in 1818. The founders of the school were Drs. Dudley and Caldwell. Its period of greatest prosperity was from 1830 to 1837, at which last date a disruption took place, and a part of the Faculty removed to Louisville.

The Medical Department of the University of Louisville began as the Medical Institute, chartered in 1833. Nothing was accomplished, however, until the quarrel in the Transylvania School above referred to took place, when Dr. Caldwell enlisted in the cause of the Louisville School, and in 1837 succeeded in obtaining for it a grant of a square of ground, and money for buildings and apparatus. Lectures began the same year, the Faculty consisting of Drs. Caldwell, Cooke, and Yandell, from the Lexington School, and of Drs. Cobb, Henry Miller, and J. B. Flint. In 1839 Dr. Drake joined the School, and in the following year Dr. S. D. Gross took the place of Dr. Flint. In 1846 the School was transferred to the University, and in 1874 it had 123 graduates, its largest class.

In connection with these schools a special reference is due to Dr. Charles Caldwell, their principal promoter. He was of Irish descent, born in North Carolina in 1772; died 1853. After obtaining the best education which his native State could afford, he went to Philadelphia in 1792, and continued the study of medicine under Dr. Rush, passing his examination in 1794, and taking his diploma in 1796. During the next twenty years his pen was constantly busy with lectures, addresses, and controversial articles, many of which related to yellow fever. In 1819 he accepted an invitation to the Transylvania School, and from this time he gave his best energies to this institution, and subsequently to the Louisville School. He was one of the most voluminous writers which this country has produced, but he contributed little or nothing of permanent or scientific value to the literature of his profession, and the only work of his which is worth perusal to-day is his autobiography. His critical reviews, being dictated almost exclusively by personal prejudices, are in almost all cases samples of special pleading rather than true criticism, and characterized by their "smartness" rather than their justice.

In the South the Medical College of South Carolina, chartered in 1823, leads the way. The Medical College of Louisiana was incorporated in 1835, and in 1845 became the Medical Department of the University of Louisiana. This school is remarkable as having received State aid to the amount of \$121,000.

In connection with the medical schools, notice should be taken of the Medical Institute of Philadelphia, otherwise known as the Summer School, which, in addition to furnishing instruction to students and supplementing the winter course, was of very great value as a training school for Professors. It was founded in 1817 by Dr. Chapman, and with it were connected, from time to time, Drs. Chapman, Horner, Dewees, Samuel Jackson, J. K. Mitchell, John Bell, Hodge, Neill, Gibson, Gerhard, Norris, and Pepper.

The total number of graduates from our medical schools during the five years ending July 1, 1875, was about 10,250, that is, a little over 2000 per year; the number in 1875 being about 400 more than in 1871.

Dr. J. M. Toner estimated the average age of beginning practice to be $24\frac{1}{2}$ years, of death 58 years, making an average of about 34 years practice to each.¹

Dr. S. E. Chaillé estimates that there are about 47,000 regular physicians in the United States, being about one to every 700 of the population.²

Space is wanting for further details with regard to our medical schools. That there are too many of them is a general complaint, the answer to which is the same as that given above with regard to the like objection with regard to medical journals, and which answer is of about the same value in each case.

In attempting to estimate the quantity and value of the additions made by the medical profession of this country to the world's stock of knowledge of the laws of healthy and diseased action, and the means of modifying these actions, it is very difficult to make generalizations which shall be at once clear, comprehensive, and correct. This difficulty becomes an impossibility, if we are to speak of the education, mental

¹ Statistical Sketch, etc. Indiana Journ. of Med., 1873, vol. iv. p. 1.

² The Medical Colleges, etc. New Orleans Med. and Surg. Journ., 1874, vol. i. N. S. p. 818.

characteristics, and professional qualifications of the whole body of physicians of this, or any other country, since only the most vague and indefinite statements will hold good. We have had, and still have, a very few men who love science for its own sake, whose chief pleasure is in original investigations, and to whom the practice of their profession is mainly, or only, of interest as furnishing material for observation and comparison. Such men are to be found for the most part only in large cities where libraries, hospitals, and laboratories are available for their needs, although some of them have preferred the smaller towns and villages as fields of labour. The work of our physicians of this class has been for the most part fragmentary, and is found in scattered papers and essays which have been pointed out in preceding essays; but buds and flowers, rather than ripened fruit, are what we have to offer. Of the highest grade of this class we have thus far produced no specimens; the John Hunter, or Virchow, of the United States, has not yet given any sign of existence.

We have in our cities, great and small, a much larger class of physicians whose principal object is to obtain money, or rather the social position, pleasures, and power, which money only can bestow. They are clear-headed, shrewd, practical men, well educated, because "it pays," and for the same reason they take good care to be supplied with the best instruments, and the latest literature. Many of them take up specialties because the work is easier, and the hours of labour are more under their control than in general practice. They strive to become connected with hospitals and medical schools, not for the love of mental exertion, or of science for its own sake, but as a respectable means of advertising, and of obtaining consultations. They write and lecture to keep their names before the public, and they must do both well, or fall behind in the race. They have the greater part of the valuable practice, and their writings, which constitute the greater part of our medical literature, are respectable in quality, and eminently useful.

They are the patrons of medical literature, the active working members of municipal medical societies, the men who are usually accepted as the representatives of the profession, not only here, but in all civilized countries; they may be famous physicians and great surgeons in the usual sense of the words, and as such, and only as such, should they receive the honour which is justly their due. They work for the present, and they have their reward in their own generation.

There is another large class, whose defects in general culture and in knowledge of the latest improvements in medicine, have been much dwelt upon by those disposed to take gloomy views of the condition of medical education in this country. The preliminary education of these physicians was defective, in some cases from lack of desire for it, but in the great majority from lack of opportunity, and their work in the medical school was confined to so much memorizing of text-books as was necessary to secure a diploma. In the course of practice they gradually obtain from personal experience, sometimes of a disagreeable kind, a knowledge of therapeutics, which enables them to treat the majority of their cases as successfully, perhaps, as their brethren more learned in theory. Occasionally they contribute a paper to a journal, or a report to a medical society; but they would rather talk than write, and find it very difficult to explain how or why they have succeeded, being like many excellent cooks in this respect. They are honest, conscientious, hard-working men, who are

inclined to place great weight on their experience, and to be rather contemptuous of what they call "book learning and theories." To them our medical literature is indebted for a few interesting observations, and valuable suggestions in therapeutics, but for the most part, their experience, being unrecorded, has but a local usefulness.

These three classes have been referred to simply for the purpose of calling attention to the fact that, in speaking of "the physicians of the United States," it is necessary to be careful. There are many other classes, and they shade into each other and into empiricism in many ways. In discussions upon this subject, it seems to be often assumed that all physicians should possess the same qualifications, and be educated to the same standard, which, in one respect, is like saying that they should all be six feet high, and in another, is like the army regulations, which prescribe the same ration and allowance of clothing for Maine and Florida, Alaska and Oregon. A young and energetic man who has spent six years in obtaining a University education, and four more in the study of medicine as it ought to be studied, that is to say, in preparing himself to study and investigate for the rest of his life, will not settle in certain districts. He has invested ten years' labour, and from five to ten thousand dollars, and a locality which will give him a maximum income of, perhaps, fifteen hundred dollars per annum will not be satisfactory, in part because the capital should bring a better interest, in part because he will have acquired tastes which will make his life unpleasant in such places. Yet these places must have physicians of some sort, and it is not clear as to how they are to be supplied, if some of the universal and extensive reforms in medical education which have been proposed were to be enforced.

Certainly the standard for admission and for graduation at almost all our medical schools is too low, and one-half, at least, of these schools have no sufficient reason for existence; but it is not probable that it would improve matters much to establish a uniform, which must, of course, be a minimum, standard.

Of the material aids and instruments required for the advancement of medical science, such as hospitals, libraries, and museums, we have obtained as much as could be expected. With the proper use of those we now possess will come the demand for, and the supply of, still better facilities for the work of the scholar and observer.

The defects in American medicine are much the same as those observed in other branches of science in this country, and to a great extent are due to the same causes.

Culture, to flourish, requires appreciation and sympathy, to such an extent, at least, that its utterances shall not seem to its audience as if in an unknown tongue.

We have no reason to boast, or to be ashamed of what we have thus far accomplished; it has been but a little while since we have been furnished with the means of investigation needed to give our observations that accuracy and precision which alone can entitle medicine to a place among the sciences properly so called; and we may begin the new century in the hope and belief that to us applies the bright side of the maxim of Cousin, "It is better to have a future than a past."

REVIEWS.

ART. XX.—*The Medical and Surgical History of the War of the Rebellion.* Part II., Volume II. Surgical History. Prepared under the direction of JOSEPH K. BARNES, Surgeon-General United States Army. By GEORGE A. OTIS, Assistant Surgeon United States Army. First issue. Royal quarto, pp. xii., 1024, xx. Washington: Government Printing Office, 1876.

In the number of this Journal for July, 1873 (pp. 150–173), it was our pleasant task to offer our readers a brief analysis of the first portion of Dr. Otis's gigantic work, and we are now called upon to review his second volume, which is more than one-fifth larger than its predecessor, much more fully and elegantly illustrated, and if possible even more thorough and elaborate in its treatment of the various subjects discussed within its pages.

In Volume I., as will be remembered, after some preliminary matter, the consideration of Special Wounds and Injuries was begun, and continued through five chapters, which dealt respectively with Injuries of the Head, and with those of the Face, Neck, Spine, and Chest. The present volume embraces four chapters, devoted in succession to Injuries of the Abdomen, Injuries of the Pelvis, Flesh Wounds of the Back, and Wounds of the Upper Extremity. Wounds of the Lower Extremity, with various generalities, will be considered in Volume III., which it is expected will conclude the series, and which will contain a copious analytical index to the whole work.

Although, as justly remarked by Dr. Otis, the abdomen and pelvis are contiguous, and constitute in reality but one cavity, yet, in dealing with the vast number of facts furnished by the records of the war, it is convenient to adopt an arbitrary division, and to consider separately the injuries of each region. Accordingly CHAPTER VI. is devoted to the important subject of INJURIES OF THE ABDOMEN, all those organs being regarded as abdominal which lie between the diaphragm and the superior strait of the pelvis.

Contusions and Wounds of the Abdominal Parietes are considered in the First Section, and the value of deep sutures in cases of incised wounds is insisted upon as a means of preventing the subsequent occurrence of ventral hernia. This is a point in regard to which the experience of our army officers has contradicted the doctrines formerly taught by Guthrie and Tripler, and has rather confirmed those of Mathew and Legouest: the quilled suture is particularly commended by Dr. Otis, who mentions that he has by this means twice secured firm cicatrices without protrusion in extensive abdominal wounds of horses. Under the heading of *complications* of parietal wounds, hemorrhage from the epigastric and other arteries is alluded to, and the danger and folly of temporizing in these cases by the use of compression and styptics, forcibly pointed out:—

"The instances to be cited," says Dr. Otis, "teach emphatically that wounds of the epigastric, circumflex, mammary, and lumbar arteries are not to be regarded as trivial, but demand the rigorous application of the rules for the management of wounded arteries, the exposure of the bleeding point, and a proximal and a distal ligature. Schindler and Hesselbach have invented compressors for the epigastric artery, and the practitioner will find propositions in the books for compression by bougies introduced into the wound, or by raising a fold of the soft parts, and recommendations of the ever-ready styptics; but all such means should be rejected by those who would practise sound surgery."

Several instances of the lodgment of foreign bodies in the abdominal walls are narrated, and exception is taken to Guthrie's rule that no search for balls should ordinarily be in such cases undertaken. As pointed out by Dr. Otis, foreign bodies seldom become encysted in the abdominal parietes, where their movement is facilitated by the action of the muscles, while their retention subjects the patient to the constant risk of suppuration occurring in dangerous proximity to the peritoneum.

Visceral Injuries without External Wounds form the subject of the Second Section, which is one of much interest to practical surgeons. In no instance during the war was sudden death attributed to a blow upon the abdomen unattended with organic lesion, and Dr. Otis considers Mr. Pollock and Mr. Bryant justified in their scepticism as to the possibility of such an occurrence. No case also appears to have been met with of fatal laceration of a large *bloodvessel* without the presence of an external wound, but reference is made to an example of rupture of the aorta recorded by Legouest, to three of rupture of the vena cava cited by Velpeau, and to one of rupture of the splenic vein, quoted by Prof. Gross. In the *Transactions of the Philadelphia Pathological Society* (vol. v. p. 107), will be found a case, reported by the present writer, of rupture of the external iliac artery, proving fatal on the twelfth day. Ruptures of the *liver* are represented by five cases; ruptures of the *spleen* by three, and ruptures of the *kidney* by four; two of the latter, however, lacking post-mortem proof of correct diagnosis, as the patients recovered. No examples were specifically reported of rupture of the stomach, gall-bladder or duct, ureter, pancreas, or suprarenal capsules, but as thirty-one cases were recorded simply as laceration of the viscera, without particular mention of the organs implicated, it is quite probable that some of these rare lesions actually occurred. The same may be said in regard to rupture of the omentum¹ and mesentery, and of the diaphragm. Rupture of the *intestines* was specifically noted in five cases, the appearance of the injured bowel in one instance being well represented in a photographic plate executed by the "Woodbury process."

The Third Section deals with the important subject of *Penetrating Wounds of the Abdomen*, and will we doubt not excite a good deal of comment, and probably no little criticism, from surgical writers—the author, from his study of the records of the war, having been led to recommend much more heroic measures in the management of these cases than are ordinarily considered advisable. We shall endeavour fairly to present the evidence adduced by Dr. Otis in support of his views, so that our readers may judge for themselves of the soundness of his conclusions. *Simple penetrations and perforations without injury to the viscera*, are first considered, this category embracing nine cases of bayonet wound, of which six terminated in recovery, one of sword thrust, several of knife wound, and one of arrow wound, all of which likewise ended favourably. A number

¹ A case of fatal rupture of the gastro-colic omentum was reported by the reviewer in the *Proceedings of the Philadelphia Pathological Society*, vol. ii. p. 117.

of cases were also reported in which simple penetration was supposed to have been due to gunshot injury, and in a few instances the diagnosis was confirmed by the protrusion of unwounded viscera (the patients recovering), or by post-mortem examination. In some cases also balls were voided in defecation after considerable intervals, thus rendering it probable that they gained access to the bowels through consecutive ulceration, rather than by direct injury at the time the wounds were inflicted. Upon the whole, however, Dr. Otis seems justified in his conclusion—

“That really *simple penetrating wounds* of the abdominal cavity, that is, penetrations or perforations without visceral lesion, are very rarely inflicted, either by sharp or blunt weapons, or by shot; and that most of the apparent exceptions are explicable by one or the other of two conditions: either that the true course of the weapon or projectile evades the cavity it apparently enters; or else, traversing the cavity, is really associated with injuries of the viscera, with lesions usually unattended by extravasation, and susceptible of repair.”

Wounds of the Stomach next occupy Dr. Otis's attention, and he judiciously points out the indefiniteness of most of the symptoms which are commonly supposed to indicate that this organ has been wounded, and expresses the opinion that, apart from ocular evidence, or that derived from the introduction of the educated finger, extravasation of the contents of the stomach is the only pathognomonic sign of the division of its walls. We suppose that Dr. Otis would include under the heading “ocular evidence,” the discovery of *shot* in the matters vomited immediately after the injury, as was observed in a case reported some years since by Dr. H. Culbertson, of Zanesville, Ohio. Several fatal cases of punctured or incised wound of the stomach were registered during the war, and a remarkable example has since been placed on record in which gastrography was unavailingly resorted to by Assistant Surgeon Bentley; two cases of recovery from similar injuries have likewise been reported, but we infer from the reticent manner in which they are referred to that neither is considered unquestionable. Gunshot wounds of the stomach form a large group, and one of which the mortality appears to have been very great; though nineteen alleged instances of recovery are quoted, only one is considered by Dr. Otis to be certainly authentic.

“The observations of the war on this subject may be summed up as embracing four fatal punctured or incised wounds, one incontestable recovery from a shot perforation, a few recoveries from shot wounds in the gastric region, in which the diagnoses were not determined unequivocally, and nearly sixty fatal cases of more or less complicated shot wounds of the stomach.”

In three cases, patients survived for some weeks with gastric fistulæ, which, however, were believed to have been caused by consecutive ulceration rather than by direct wound of the stomach. Gastrotomy was not resorted to in any case, nor was gastrography, the instance of the latter operation already referred to as having been reported by Surgeon Bentley, having occurred since the termination of the war. In a very interesting note, Dr. Otis has investigated the literature of gastrotomy (for the removal of foreign bodies), which operation he finds has certainly been successfully employed in six cases, less surely in five more, and unsuccessfully in one. To these must be added the successful case of M. Labbé, which has recently attracted so much attention in Paris (*l'homme à la fourchette*). Of the analogous operation for obstruction of the œsophagus (which with Dr. Otis's permission we must still venture to call *gastrosotomy*), seventeen fatal cases are referred to, a number which has since

been increased to twenty-five;¹ the success in the one set of cases is almost as uniform as the want of success in the other.

Wounds of the Small Intestines are justly considered by Dr. Otis as among the most important, as they are certainly the most fatal, complications of penetrating wounds of the abdomen. *Punctured and incised* wounds were uncommon, and mostly resulted from stabs inflicted in private brawls. Only a few sabre or bayonet wounds of the small intestine came under treatment, though a number were observed on the bodies found on the battle field. In none of the cases received into hospital was there visceral protrusion, and all seem to have terminated fatally from fecal extravasation and consequent peritonitis. Enteroraphy was not resorted to in any of these cases, but has since the war been successfully employed in two out of five instances in which it has been practised.

Gunshot wounds of the small intestine were of comparatively common occurrence, and five cases of recovery were reported by competent observers, though, post-mortem confirmation of the diagnoses being of course wanting, it is, as pointed out by Dr. Otis, not conclusively established that the injured parts were not in the large rather than in the small intestines. Wounds of the duodenum were observed in three fatal cases, while wounds of both jejunum and ileum were very frequent, and in a large number of instances² more than one convolution of intestine was wounded by the same ball; a circumstance which must be remembered in considering the use of sutures in these cases. A peculiarity of gunshot wounds of the bowel, upon the importance of which Dr. Otis properly insists, is that the lesion is more extensive in the muscular and mucous coats than in the serous, a state of things which obviously favours the reparative process in these injuries. Protrusion of the bowel is very rare in cases of gunshot wound, whether the gut itself is or is not injured; three cases are however reported, in which protrusion of wounded bowel occurred, and in two of which *enteroraphy* was practised, though unfortunately without benefit. In the first of these cases, three wounds had been sewed up in the protruding portion, but after the patient's death, which occurred twenty-four hours later, two additional wounds were found the existence of which had not been suspected; there had, however, been no fecal extravasation, the fatal result being due apparently to commencing gangrene of the bowel with incipient peritonitis.

Wounds of the large intestine are much less serious than those of the smaller bowel, a fact which is amply accounted for by the different anatomical relations of the parts. *Punctured and incised wounds* were noted in four cases, two ending in recovery and two in death, one of the latter after enteroraphy. *Gunshot wounds* of the transverse colon were more serious than those of either the ascending or the descending portion, only one recovery being noted in the former category, as compared with thirty-two and twenty-six in the two latter respectively. Of the whole fifty-nine patients, forty-one are known to be still living, four to have subsequently died (fecal fistulæ persisting to the last), and fourteen have not been recently heard from, though their wounds were firmly healed

¹ Sydney Jones has operated three times, and Sédillot and Forster each twice, while single cases have been reported by Fenger, Curling, Durham, Vonthaden, Lowe, Maury, T. Smith, MacCormac, Clark, Troup, Mason, Bryant, Jackson, Jacobi, Tay, Hjork, Heath, and MacKenzie.

² In a foot note, Dr. Otis estimates that the average proportion is between two and three wounds for each shot.

before they passed from observation. Fecal fistulæ still continue in five cases, but in the remainder closed in periods varying from one month to twelve years after the reception of the injuries. In addition to the cases above referred to, there are several in which recovery was obtained, the balls being voided at stool; but in most of these the bowel was probably not wounded in the first place, but penetrated secondarily by the process of ulceration. An important difference, insisted on by Dr. Otis, between the condition of abnormal anus which results from gunshot wound, and that which follows neglected strangulated hernia, is that in the former the septum, spur, or *épéron*, which separates the contiguous portions of gut, is commonly absent; hence the greater probability of spontaneous closure in the fistulæ which result from gunshot injury. When the septum exists, Dr. Otis judiciously advises that a thorough trial should be given to Desault's plan of treatment by compression, before resorting to the use of Dupuytren's enterotome or any of its numerous modifications.

Dr. Otis's remarks upon the subject of *Enteroraphy* constitute the portion of his book which will probably excite most controversy, and that we may run no risk of misrepresenting his views upon this important topic, we shall, as far as possible, quote what he has said upon the subject in his own words. We would, however, first call attention to the admirable historical sketch which he gives of the practice of applying sutures in intestinal lesions, and to his clear description, illustrated by numerous wood-cuts, of the various forms of stitch recommended by authors. Those which are particularly, and we think rightly, approved by Dr. Otis, are the forms of suture respectively introduced by Lembert and by Gély. Upon the subject of enteroraphy in general, Dr. Otis says:—

“From the evidence presented in the preceding pages, it may fairly be inferred that in all punctured and incised wounds of the intestinal canal attended with protrusion, the safest practice consists in closing the intestinal wound by suture, and reducing the protruded viscus, unless its structure is irretrievably disorganized and the adoption of the alternative of establishing a preternatural anus is compulsory. It is highly probable that in the rare instances in which shot lacerations of the intestine are attended by protrusion, a like practice is applicable. In stabs and shot wounds implicating the small intestine, unattended by protrusion, the common practice has been to seek to avert extravasation into the peritoneal cavity by arresting peristaltic action by opium, and by enjoining absolute quiet, and to indulge the hope that adhesions may form through the efforts of nature. Experience teaches that, in the vast majority of instances, such hopes are illusory. Nine times in ten, or oftener, extravasation takes place, and hyperacute peritonitis ensues, and generally proves fatal within forty-eight hours. When the patient rallies from the faintness and depression immediately following the wound, there is almost always tension and tenderness of the belly; then, in John Bell's graphic language, come on dreadful pain and vomiting, costiveness, hiccough, the torments of the *miserere mei*, and the patient in a great anguish expires. Or else, after the intense pain, there may be an interval of deceitful ease, which is merely a sign of gangrene, and the patient sinks into a low muttering delirium and dies. Guthrie justly declares that ‘the do-nothing system is generally followed by death.’ I have shown that in wounds of the small intestines of any magnitude, the pathological evidence of recoveries achieved by the unaided efforts of nature, even through the establishment of a preternatural anus, is limited to a very few instances, of which none are absolutely unequivocal. Therefore, in wounds of this viscus, unattended by protrusion, when there is danger of extravasation, the external wound should be enlarged, and the wound in the intestine closed by suture. Wounds of the large intestines often do well without interference, and, in these wounds, enteroraphy will seldom be requisite unless the wounded colon protrudes. Yet there are exceptional cases, in which extending the

external wound, and sewing up the rent in the gut, is the best and only means of preventing extravasation, as is well exemplified by the successful case of enteroraphy, for shot laceration of the colon, recorded by Baudens."

We suppose that there can be no diversity of opinion as to the propriety of applying sutures in cases of wounded intestine accompanied by protrusion. Here, unless the wound be so large as to render it necessary to establish an artificial anus (as was successfully done by Larrey, in a case of gunshot wound of the ileum), there can be no question that it is the surgeon's duty to close the intestinal wound by sutures, and then to return the gut within the abdominal cavity. But in cases of wound unattended with protrusion, the course to be pursued is not so clear. Non-interference is undoubtedly the practice which is approved by the majority of surgeons, though Dr. Otis is able to adduce the names of several high authorities in favour of a different course. Among these may be particularly mentioned the names of Legouest, Baudens, Pirogoff, Lohmeyer, and Beck, in Europe; and in our own country, those of Drs. Hewitt, McGuire, Lincoln, and Billings. Prof. Gross, while condemning exploratory incisions and enteroraphy in cases of gunshot injury unattended with protrusion, favours their employment in cases of punctured or incised wounds.

We feel compelled to say, though we do it with great hesitation, that, after a careful examination of all the evidence brought forward by Dr. Otis, it does not seem to us that he has established the correctness of his doctrine. He has collected in all nine cases of enteroraphy for gunshot wound, of which one was completely successful, three ended in recovery with fecal fistula, and five proved fatal. But in studying these cases more closely, it appears that in four of them, viz., Larrey's (already referred to), Gissing's Bentley's, and Judson's—including two of the four recoveries—the gut protruded, and that hence these have no bearing upon the point at issue. A fifth case, the third of recovery, was one in which Dr. Kinloch,¹ *seven months* after the reception of the injury, the patient having survived an attack of traumatic peritonitis, laid open the abdominal cavity, and, cutting away a portion of the wounded bowel, endeavoured by the use of sutures to restore the continuity of the remainder, the sutures giving way on the third day, and the patient, though gaining greatly in health, having still a fistula remaining when last heard from. This was undoubtedly a very remarkable case, and one which reflected the highest credit upon the skill and intrepidity of the operator, but we are not sure that it might not be as plausibly quoted in support of the doctrine of non-interference as in favour of the use of sutures. There remain, then, but four cases, viz., two of Baudens's, one of Pirogoff's, and one of Gill's. Of these, but one survived (Baudens's second case), and it was an instance of wound of the large intestine (transverse colon), and might not improbably have terminated equally well without interference.

That gunshot wounds of the small intestine usually prove fatal under the expectant mode of treatment is unfortunately but too certain. Dr. Otis has himself, however, recorded five cases of recovery, which occurred during our war, and which were regarded by the competent surgeons, under whose care they fell, as instances of wound of the lesser bowel, while the only example which he has been able to find of recovery after enteroraphy of the unprotruded small intestine, is Dr. Kinloch's case, which, as we have already remarked, the patient having survived his injury seven months

¹ See No. of this Journal for July, 1867, p. 105.

before operative measures were resorted to, might not unreasonably be looked upon as itself a triumph of expectancy. Looking at the matter practically, what would Dr. Otis have had the surgeons do, under whose care the five cases already referred to were treated? Should they, confiding in the accuracy of their diagnosis, and relying upon Dr. Otis's advice, that in lesions of the small intestine "unattended by protrusion, when there is danger of extravasation, the external wound should be enlarged, and the wound in the intestine closed by suture," should they, we say, have laid open their patients' bellies and sewed up the wounded bowels? Had they done so, some of them might perhaps have furnished additional illustrations of the obscurity of this class of lesions and of the impossibility of distinguishing wounds of the small from those of the large intestine; but does any one believe that they would, all five, have succeeded in saving their patients?

That a doubtful remedy is better than none, is, no doubt, a maxim of wide application, but we would couple it with another, that, if the surgeon can do no good, let him at least do no harm. In the presence of a penetrating wound of the abdomen, it must be remembered that there is, in the first place, at least a possibility that the bowel has escaped injury altogether; then, that if the wound has actually involved the intestine, unless the gut has protruded (when the propriety of using sutures is unquestioned), there is no means of being absolutely certain that it is the small and not the large intestine that is affected, and that in the latter case at least fifty-one recoveries by expectant measures, in our war alone, are to be balanced against a single successful operation (Baudens's) in a case in which fecal matter escaped from the wound, and which might therefore have recovered without interference; while if the wound is in the lesser gut there is no successful case of enteroraphy to be referred to—Kinloch's brilliant operation can be no guide to the surgeon in the management of a recent injury—and in our war alone at least five successes claimed for expectancy by surgeons, the accuracy of whose diagnosis is only rendered doubtful by the fact that their patients recovered.

Speaking for himself, the present writer would say that the only case in which he could consider the exploratory incisions recommended by Dr. Otis as justifiable, would be one in which fecal matter was actually escaping from the external wound; and even in such a case it would be a matter of grave hesitation whether the patient's chance of recovering by the formation of a fecal fistula, without interference, was not greater than the prospect of saving life by laying open the wound and sewing up the apparent intestinal lesion, only perhaps to find fatal extravasation ensue from another wound which had eluded detection.

We beg to repeat that in venturing to differ from Dr. Otis, we do so with extreme hesitation, and with a full appreciation of the great value of his opinion, and of the weight which it will justly carry with it wherever his volume is read.

Wounds of the Liver are next considered. The records of the war furnished but three instances (one fatal) of punctured or incised wounds of this viscus, and Dr. Otis's researches into the annals of surgery have enabled him to refer to only about sixty cases of a similar character, of which twenty-six appear to be authentic examples of recovery. Gunshot wounds of the liver came under treatment in one hundred and seventy-three cases, the hepatic lesion in fifty-nine of these being the sole important injury, while in the remainder it was complicated with fractures of the

ribs or vertebræ, or wounds of other viscera. Twenty-five of the first group, and thirty-seven of the second, terminated favourably; thirty-four of the first and seventy-four of the second ended in death; while the result in three cases could not be ascertained. The most frequent causes of death in the fatal cases were hemorrhage, peritonitis, and, at a later stage, hepatic abscess. The number of alleged recoveries seems suspiciously large, especially when it is found that Dr. Otis's industry has enabled him to glean not more than sixty such cases from other sources; and hence we are not surprised to learn that in thirty of the sixty-two cases the diagnoses appear to have been based upon questionable evidence, and that the number of incontestable recoveries is therefore reduced to thirty-two. One unsuccessful attempt was made to extract a ball from the liver, and in one case a portion of the disorganized viscus was successfully removed by ligature; this and a few similar instances referred to in a foot-note lead Dr. Otis to believe "that this form of *hepatotomy* is not hazardous."

Wounds of the Spleen.—Only one case (fatal) of bayonet wound of the spleen was reported during the war; but an instance of recovery from the effects of a similar injury has been since recorded by Assistant Surgeon Williams. About thirty cases of gunshot wound of the spleen, and two instances of recovery, were reported, though the histories in these cases lack precision; in one of them the spleen was removed by ligature by Dr. Alston, of Texas. Dr. Otis appends a tabular statement of twenty-six cases of splenotomy for all causes; one of these (No. 18, Dorsey's) appears to have slipped in by mistake, as the account in Eve's "Remarkable Cases in Surgery" shows that the spleen was not removed, but, its adhesions having been broken up, was replaced "as nearly as possible in what I [the operator] conceived to be its natural position." To the remaining twenty-five cases may be added six others, since reported by Urbinati, Watson, Markham, Elias, Pietrzycki, and Péan (his second operation), with one mentioned in the *British Medical Journal* for July 8, 1876, and in the present number of this Journal, and, if the reader chooses, still an eighth attributed to Hunter by that somewhat apocryphal authority, the facetious Mr. William Wadd. Of these thirty-two or thirty-three cases, nineteen or twenty, in which the excision was done for traumatic causes, all terminated favourably, while of the thirteen pathological operations, at least seven (more than half) proved fatal.

Wounds of the Pancreas, from gunshot injury, were noted during the war in five cases, of which four proved fatal, one from shock and peritonitis, and three from secondary hemorrhage. In the case which terminated favourably, a portion of the pancreas protruded, and was removed by strangulation with a silver wire; this, with three somewhat similar cases cited by Dr. Otis (Kleberg, Laborerie, Caldwell), may form the basis for some future history of *pancreatotomy*, which, when performed for traumatic causes, appears to be an operation attended with very little risk.

Wounds of the Kidney.—There were no instances recorded of punctured or incised wounds of this organ, nor of persistent urinary fistula. Recovery is said to have followed gunshot injury of the kidney in twenty-six cases, several of which, however, are not very satisfactorily reported, while sixty fatal cases are recorded, many of these having been complicated with wounds of other viscera. Neither *nephrotomy* nor *extirpation of the kidney* was attempted during the war. Of the former operation, in its limited meaning of cutting into the kidney (as a remedy for *calculus*), six or seven cases have now been recorded since the publication of the

paper in which Mr. T. Smith urged the revival of the proceeding; but all have, we believe, proved fatal except Durham's and Gunn's cases, in neither of which was any calculus discovered. As a remedy for *hydronephrosis* and *pyonephrosis*, the measure has been much more successful, four out of seven cases of this nature, which the present writer has collected, having terminated favourably. *Extirpation of the kidney* appears to have been performed in fifteen cases, of which nine proved fatal.

Wound of the Supra-renal Capsule was only noted in one instance, and the cases in which the *omentum* or *mesentery*, or abdominal *blood-vessels* were wounded, without other serious complications, were of course very few.

The amount of space already consumed by this review, and the large quantity of material yet remaining to be considered, compel us to pass over much of interest in Dr. Otis's account of the complications of abdominal injuries, and we will terminate our notice of this chapter by quoting briefly from his concluding remarks upon treatment.

"In the general management of wounds of the abdomen, venesection was abandoned, as far as can be learned, in the armies on either side, even more completely than in the treatment of wounds of the chest. There were those who still placed confidence in the controlling power of mercurial preparations over inflammation, and the administration of calomel formed part of the treatment in many cases. Surgeon E. Swift observed several apparently desperate cases of traumatic peritonitis, which terminated favourably under the method commended by the elder Larrey, of inunction with gray ointment after vesication of the entire surface. But in all cases, opium was the main resource. . . . Apart from the general advantages of this invaluable remedy, in cases of wounds of the abdominal viscera, by arresting peristaltic action, it aided in securing the rest of the wounded part, the first condition in the reparation of all traumatic lesions. Diffuse inflammation once established, however, neither this nor any other remedy was of avail, an experience repeated in the recent Franco-German War. But traumatic peritonitis is often circumscribed, and when localized in immediate proximity with the wound or ball-track, it is unattended by general reaction, and the local reaction may be protective only, not transgressing the plastic stage, and serving simply to establish adhesions which may guard against effusions into the peritoneal cavity. Even when less strictly circumscribed, when effusion has taken place, local traumatic peritonitis may still exert a beneficent protective influence, by encysting the foreign matters extravasated into the peritoneal cavity by plastic exudations. To restrain inflammation within these salutary limits, absolute rest is the most important indication, the patient being suffered neither to be moved nor to move himself; and hence the best contemporaneous surgeons strongly insist that men with penetrating wounds of the abdomen shall be permanently treated as near as practicable to the spot where they fall. . . . Food and drink, save a little ice or cold water, are to be absolutely interdicted at first, and then the blandest nutriment, such as milk, may be sparingly allowed. . . . If there is a single wound, the patient should lie in that posture that will place the orifice downwards and favour the approximation and adhesion of the viscera to its edges. If the abdomen is perforated, it will usually be best to make the exit orifice dependent. When there is evidence that a viscus is wounded, the parietal wound must always be left open except in cases in which enterorraphy is practised. No advantageous effects were obtained by local depletion or by emollient fomentations at an early period; but extended and protracted applications of ice over the entire abdomen were believed, in several instances, to have exerted a decided influence in moderating inflammation. The majority of surgeons esteem moderate compression by a circular bandage useful. Dr. Neudörfer regards the gypsum bandage as peculiarly adapted to this class of injuries. If the stomach or small intestines are divided, there is no reasonable presumption that fecal extravasation and consequent

hyperacute generalized peritonitis can be averted unless by operative interference. Under these circumstances, therefore, the surgeon should enlarge the wound, carefully cleanse the cavity, and unite the solution of continuity in the wounded viscus by sutures."

Our reasons for questioning the soundness of the advice given in the last sentence have already been laid before our readers, and need not be repeated.

In CHAPTER VII., which is somewhat longer than its predecessor, Dr. Otis takes up the subject of INJURIES OF THE PELVIS. These, as a class, are much less fatal in their consequences than injuries of the abdomen, the mortality in the latter being in round numbers more than seventy-five, and in the former less than twenty-five per cent. Indeed the careful student of this chapter will, as remarked by Dr. Otis, "be impressed by the severity of the injuries compatible with recovery, that the parts in this region will sustain, rather than by their extreme danger."

Section First deals with *Shot Fractures of the Pelvic Bones*, regarding which an important prognostic mark is mentioned, the gravity of fractures at the wound of entrance being much greater than of those at the wound of exit—a similar rule to that established in the case of the ribs by the observations of Dr. J. H. Brinton, during our war, and more recently of Pirogoff, in the late Franco-German campaign. The whole number of cases of shot fracture of the pelvis reported during our war was 1494, and in 829 of these the *ilium* was known to be implicated, there being besides a large proportion in which the particular bone affected was not specified. The left ilium was more frequently struck than the right, the difference amounting to about twelve per cent. of the number of cases in which the side of the injury was noted. The fatal cases were 211 in number, and in 33 of these the cause of death was pyæmia or septicæmia. Caries and necrosis were very frequent complications in those cases which terminated favourably. In 151 instances, operations of greater or less magnitude were undertaken, these consisting chiefly of extractions of pieces of bone or of bullets, or other foreign bodies. In two cases balls were removed after preliminary trephining, one patient recovering, though imperfectly, and the other dying from pyæmia on the fifteenth day. Altogether, Dr. Otis seems to be amply justified in declaring that—

"Sufficient evidence has been adduced to prove that authors have erred in representing shot fractures of the ilium as being dangerous, and to indicate that the prognosis of Percy should be re-established."¹

Gunshot fractures of the *pubis* were specifically noted in 86 cases, of which 43, or just one-half, proved fatal. Fourteen were complicated with vesical, and eleven with rectal lesions, and there were besides many cases reported of wound of the bladder or rectum "with fracture of the pelvis," without indication of the special bone involved. In one very interesting case of complete recovery after shot fracture of the pubis, the presence of a ball was recognized at a depth of eight inches within the pelvis by the use of Nélaton's probe, and the foreign body then removed through a counter-opening.

Gunshot fractures of the *ischium* were represented by 73 cases, of which 31 proved fatal. Vesical and rectal lesions here too proved serious complications, and in many of these cases, as in those of pubic fracture,

¹ "Baron Percy taught that 'Les fractures des os des îles ne sont pas dangereuses.'"

wounds of the genital organs were also observed. Sequestra and foreign bodies were removed in several instances, but no formal excision of the ischium appears to have been attempted.

One hundred and forty-five gunshot fractures of the *sacrum* were reported, the result in three cases being undetermined, and sixty-two of the remainder having proved fatal. Among the instances of recovery were four in which the bladder was penetrated, and eight out of nine cases in which the rectum was wounded, likewise did well. Paralysis ensued in some cases from injury of the neighbouring nerves. Pyæmia was the cause of death in eight cases. Operative measures, consisting chiefly in the extraction of bone fragments or missiles, were adopted in twenty-five cases; in one instance, access to an impacted ball was facilitated by the use of the trephine.

Gunshot fracture of the *coccyx* was noted in seventeen cases, of which six ended fatally; one case was complicated with wound of the rectum alone, and three with wounds of both rectum and bladder; two of the latter being among the fatal cases. Excision of the coccyx does not appear to have been required in any instance.

Section Second is devoted to *Injuries of the Parts contained in the Pelvis*.

"The frequency," says Dr. Otis, "with which active therapeutic measures may be advantageously employed in physical lesions of this region, contrasts strongly with the comparatively rare occasions where such measures can be hopefully employed in injuries of the contents of the other great cavities.

. . . In the pelvic cavity . . . only those injuries involving the great bloodvessels and the part of the bladder covered by the peritoneum, are necessarily beyond the resources of art."

After a brief consideration of *Shot Penetrations or Perforations without Visceral Injury*, lesions which appear to be much less infrequent than corresponding wounds of the abdomen, Dr. Otis takes up the subject of *Injuries of the Bladder*. No unequivocal instance of rupture of this organ from external violence was reported, nor were any examples noted of sword, lance, or bayonet wounds of the bladder. Under the heading of *concussion* of the bladder, Dr. Otis refers to the doctrine of Blenkins, Legouest, and Hamilton, that "paralysis of the bladder" may follow shot contusions of the abdominal parietes without direct vesical lesion. We agree with Dr. Otis that the evidence in the case adduced is very unsatisfactory, and can indeed see nothing more in it than a history of sympathetic urinary retention, such as is occasionally observed after injuries of almost all parts of the body. *Shot wounds* of the bladder were reported in 183 cases, of which no less than 87 terminated in more or less complete recovery; it is to be noted, however, that in most of the cases which ended well, the balls entered the bladder from below, wounding the organ therefore in parts uncovered with peritoneum. In a majority of the cases, too, convalescence was retarded by the persistence of urinary fistulæ, and in a few instances pensioners have since the war succumbed to these complications. In a number of cases foreign bodies lodged in the bladder, spiculæ of bone sometimes making their escape by the urethra, but the offending substances usually becoming encrusted with urinary deposits, and necessitating removal by operation.

"The annals of the war, or donations to the museum, furnish twenty-one examples of lithotomy for the removal of concretions consequent on wounds of the bladder. In twelve, these were formed about projectiles from firearms; in

one, about an arrow-head; in three, upon bone-splinters; in three, on inspissated mucus, or blood, or with no recognizable nucleus; in two, respectively, upon a bit of cloth and upon a tuft of hair."

Seventeen of the whole twenty-one cases terminated favourably. The lateral operation is known to have been employed in twelve cases (one fatal), the bilateral in three, the supra-pubic in three (two fatal), and the median in two. In one case neither the form of operation nor the result has been ascertained.

In the management of wounds of the bladder, Dr. Otis, judiciously, as we think, approves Larrey's doctrine that in most cases a catheter should be kept in position during the whole course of treatment. Although a few cases may recover without the use of the catheter, such as that reported by Prof. Van Buren, yet in most instances the use of the instrument is, we believe, justly regarded as an important measure; an exception may, however, be made in those cases in which the ball has entered through the perineum, as in these the wound itself furnishes a sufficient means of drainage in the most favourable position.

Wounds of the Prostate were observed in a few cases, but seldom without other and more serious complications.

Wounds of the Rectum, as the result of gunshot injury, were noted in 103 cases, of which 44 resulted fatally; in 46 cases, concomitant fractures of the pelvic bones were specially reported, and osseous lesions are believed to have existed in many more. The principal causes of death were pelvic cellulitis, septicæmia, diffuse suppuration, and secondary hemorrhage. Thirty-four cases, of which fourteen were fatal, were complicated with wounds of the bladder. In many of the cases of recovery, fecal fistulæ persisted, and in some of these the patients have succumbed since the termination of the war. One remarkable case is referred to, in which an officer was shot through the anus, the ball lodging in the lung, and causing death, without any external wound having even suggested the nature of the injury, which was not suspected during the patient's life. In his comments upon the treatment of rectal wounds, Dr. Otis judiciously urges the importance of Dupuytren's advice that the risk of fecal infiltration should be avoided by free division of the sphincters; this plan was occasionally pursued by our surgeons, and has since been most advantageously employed by Simon, Fischer, and others, in the late Franco-German war.

Fistula in Ano and Hemorrhoids were both quite common affections, particularly the latter, of which over 60,000 cases were reported. Sixty-one operations for fistula, and nineteen for piles, were recorded, all apparently having been successful.

Wounds of the Pelvic Bloodvessels and Nerves were observed in numerous cases. The sciatic artery was twice ligated, single proximal ligatures being employed in both instances, and both cases proving fatal, as did all others in which this vessel was wounded. Bleeding from the gluteal artery was successfully treated in four cases, twice by compression and twice by the proximal ligature, while eleven cases terminated fatally under the former method, and three under the latter; double ligatures were unsuccessfully employed in one case in which bleeding from a branch of the gluteal complicated a gunshot fracture of the pelvis.

"Evidently," says Dr. Otis, "lesions of the gluteal artery and its branches are not insignificant. It is probable that, when the bloodvessels are fairly severed, properly adjusted compression will control bleeding from them in almost all cases; but when an artery the size of the gluteal is but partly divided,

so that it cannot retract and be closed by the natural process of hæmostasis, then the only safe resource is the treatment insisted on by Guthrie, and the practitioner must at all hazards accomplish the difficult operation of placing ligatures on the vessel above and below the seat of injury."

The internal iliac artery was tied three times during the war, but in each case unsuccessfully; the operators were Dr. J. W. Thompson, of Paducah, Ky.; Dr. A. B. Mott, of New York; and Dr. J. C. McKee, U. S. A. In the case operated upon by the last-named surgeon, the common iliac was also tied. In a foot-note, Dr. Otis investigates the statistics of ligation of the internal iliac artery, and no doubt properly excludes the case attributed by Profs. Gross, Erichsen, and Hamilton, to J. K. Rodgers, and by the present writer, by a misprint, to Rogers; in extenuation of his own mistake, the reviewer can only plead that he was misled, as were doubtless the other writers mentioned, by the authority of so accurate an author as the late Dr. G. W. Norris; a renewed search through contemporaneous surgical literature having failed to reveal any record of such an operation, we are forced to conclude that in attributing such a case to Rodgers, Dr. Norris made one of his very few mistakes. After this candid confession of error, we trust that Dr. Otis will forgive our pointing out that he has himself gone astray in tabulating both under this head, and under that of ligation of the common iliac, Syme's famous case in which he employed the old operation "in the person of a seaman R. L——." This case was believed, during the life of the patient, to have been one of ligation of the common iliac and of both its branches, but after his death it was found that the *external* iliac had been the vessel affected, and that all the ligatures had been applied below the bifurcation of the common trunk.¹ Omitting this case, there remain in Dr. Otis's table eighteen, or, if Everet's operation be counted, nineteen cases, to which may be added five others, since recorded by McLean, Porta, Cianflone, Colluzzi, and Landi, and a sixth (unpublished) referred to by Prof. Van Buren in his report to the late International Medical Congress, as having occurred at Bellevue Hospital, New York. Of the whole twenty-five only seven terminated successfully.

Four² cases of ligation of the common iliac artery are said by Dr. Otis to have occurred during the war, the operators having been Dr. Brainard, of Chicago; Dr. McKee, U. S. A.; Dr. Isham, of Chicago; and Dr. Cutter, of Newark, N. J. Dr. Brainard's case was, as regards the operation, successful, the ligature coming away without hemorrhage, and the wound healing, though the patient succumbed to typhoid fever several months later. In his statistical summary, Dr. Otis adds to the thirty-two cases collected by Dr. Stephen Smith, fourteen others, beside the four army cases enumerated above. From these one must be deducted (Syme's case, already referred to); but, on the other hand, twelve more may be added, viz., the operations respectively recorded by Hamilton, Ingram, Hammond, Dugas, Luzenburg, Watson, Barral, D'Almeida, Pitta, Barbosa, Caldas, and Gouley, giving a total of sixty-one cases, of which forty-eight terminated in death.

¹ Medico-Chirurgical Transactions, vol. xlv. p. 387, *Postscript*.

² By a private note received from Dr. Otis, while these sheets are passing through the press, we learn that since his volume was printed he has, after repeated searches, discovered a brief record of two other fatal cases of common iliac ligation, the operators having been Prof. F. H. Hamilton, of New York, and Assistant Surgeon Alexander Ingram, U. S. A.

Wounds of the large veins and nerves of the pelvis are the subject of some valuable remarks by Dr. Otis, but the space already consumed warns us to pass on to the consideration of other topics.

Section Third is *On Injuries of the Genital Organs*. Incised wounds of the *penis* were noted in many instances, and one case of bayonet wound of this organ was recorded. Fifty-two operations were performed for phimosis, in some cases when complicated with unhealed chancroids, and with the customary ill results. Gunshot wounds of the penis were observed in 309 cases, in 41 of which death followed, usually from other concomitant injuries; amputation of the organ was thought necessary in but very few cases. Of gunshot wounds of the *urethra*, 105 examples are recorded, of which 22 proved fatal. Traumatic stricture was a common sequel in those cases which ended in recovery, while in other instances urethral fistulæ formed serious complications. Dr. Otis properly lays stress upon the importance of free incisions in cases of urinary extravasation, and of the use of the catheter as a means of preventing contraction during convalescence. Several cases of lodgment of foreign bodies in the urethra are given, one being the case of the late President Johnson, who suffered severely upon several occasions from the impaction of calculi. Dr. Otis gives a most interesting account of the various operations and instruments which have been devised by the ingenuity of surgeons for the relief of these conditions.

Organic strictures of the urethra were reported in 2581 cases, and caused eight deaths, and 247 discharges for physical debility. The treatment of stricture is considered at some length by Dr. Otis, who describes and figures all the more important instruments which have been employed in this affection, giving in particular one very interesting plate, on which is represented a group of American inventions, beginning with the early suggestions of Physick, Jameson, and Chew, and ending with the elegant modern instruments devised by Drs. F. N. Otis and Gouley. The advice given as to the treatment of stricture is generally judicious, but we must enter a respectful though firm protest against Dr. Otis's commendation of "forced catheterism." In spite of the "solid authorities" which he adduces in its favour, we cannot but regard it as a cruel and dangerous mode of treatment, and one which it would be well for humanity could it be banished from practice. Urethroraphy and urethroplasty were employed in a few instances, but many pensioners still suffer from urinary fistulæ; these unfortunate persons, Dr. Otis very properly suggests, might be assembled at some point under the auspices of the government, and skilled surgical aid invoked for their relief.

Gunshot wounds of the *testes* were observed in 586 cases, of which 66 ended in death, usually from other complications. In no instance did the shock of the injury prove immediately fatal. In 61 cases, excision of the affected organ was resorted to, with 11 deaths. Both testes were removed in four cases, one of which, however, was not an example of gunshot injury.

"An analysis of the five hundred and eighty-six cases of shot injury of the testis leads to the conclusion that there has been gross exaggeration in the statements heretofore made regarding the influence of such lesions on the *morale* of invalids. A decent aversion to publicity as to their mutilations is the only marked characteristic the editor has observed in the numerous cases brought to his notice."

Gunshot injuries of the *spermatic cord* were reported in five cases, and in two (one fatal), ligation of the spermatic artery.

Hydrocele was observed in 1586 cases, of which but 27 were submitted to operation; three of these terminated fatally, but apparently from causes unconnected with their surgical treatment. *Varicocele* occurred in 7270 cases, and in 1415 was considered a cause for discharge from service. Very few cases were treated by operation.

We feel that we run no risk of contradiction in declaring this chapter and its predecessor to be the most valuable contributions to the literature of abdominal and pelvic injuries to be found in any language.

CHAPTER VIII., though occupying only six pages, embraces all the information which Dr. Otis thinks it necessary to give with regard to **FLESH WOUNDS OF THE BACK**. Numerically important—they constituted about six per cent. of the whole number of wounds received in action—wounds of the back were seldom fatal, unless through the supervention of pyæmia or tetanus, or from badly treated hemorrhage. As the men were often ordered to lie down under artillery fire, severe lacerations of the dorsal regions were not uncommon, and Dr. Otis has given a remarkably fine chromo-lithographic plate to illustrate the appearance of the parts in a case of this nature. Reverdin's plan of skin-grafting is recommended as a means of hastening the cure in these cases, in some of which Dr. Otis tells us the wounds have remained open in the form of healthy granulating surfaces for as long a period as ten years.

CHAPTER IX., the last in the present volume, and occupying by itself nearly six hundred pages, deals with **WOUNDS AND INJURIES OF THE UPPER EXTREMITIES**. Following his usual plan, Dr. Otis considers under this heading only sword and bayonet, and other incised and punctured wounds, and gunshot injuries, reserving bruises and sprains, burns, scalds, and frost-bites, with dislocations and fractures from other than gunshot wounds, for future study in the Third Surgical Volume.

Section First is devoted to the subject of *Flesh Wounds of the Upper Extremities*, of which more than 50,000 cases were recorded during the war. Bayonet wounds were noted in 69, and other punctured wounds in 44 cases, while there were 80 examples of sabre cut, not involving the bones, and 164 of other incised wounds of this region, several of the wounds not inflicted in battle being followed by profuse bleeding, which required ligation of the brachial artery in two cases, and of the radial and ulnar each in one. Compression was successfully resorted to in one case of wounded radial, but in one or two cases of wounded brachial artery was employed with a fatal result. There were only four deaths among the whole 357 cases, two from neglected arterial bleeding, and two from causes foreign to the injury received.

Gunshot flesh wounds of the upper extremities formed a very large class of cases, in which recovery was often complicated by the occurrence of contraction and rigidity of the joints, and of atrophy and deformity from sloughing. Many cases proved fatal through the development of pyæmia, and in a large number serious bleeding required the deligation of one or other of the main arteries of the limb. Thus to this group belong four examples of ligation of the subclavian (all fatal), fifteen of the axillary (twelve fatal), seventy-six of the brachial (twenty-one fatal), ten of the ulnar (three fatal), twenty of the radial (four fatal), one (fatal) of the interosseous, besides one of the superficial palmar arch, and several of smaller branches. Compression and styptics were employed in a number of instances, sometimes with success, but more often with disastrous failure; we find nothing in the record here presented to invalidate the sound-

ness of Guthrie's time-honored rules for the treatment of arterial hemorrhage.

Wounds of large nerves were reported in many instances, but Dr. Otis passes over them rapidly, for the reason that the subject of gunshot nerve injuries has been so thoroughly studied by Dr. S. Weir Mitchell and his colleagues, whose opportunities for observation in the Christian Street Hospital were unrivalled. Neurotomy was practised in one case without benefit, and Dr. Otis remarks, very justly, as it seems to us, that—

“Notwithstanding recent experiments, this appears a surgical resource to be entrusted only to practitioners possessing more than ordinary physiological knowledge.”

In a considerable number of cases, amputation was required, usually for hemorrhage or on account of gangrene. There were fourteen cases of amputation at the shoulder, belonging to this category, with eight deaths; fifty-four cases of amputation of the upper arm, with twenty-seven deaths; and fourteen cases of amputation of the forearm, with three deaths.

Section Second treats of *Fractures of the Clavicle and Scapula*, including those from gunshot injury and a few which resulted from bayonet or sabre wounds, fractures from causes incident to civil as well as to military life being as usual reserved for a future chapter. There was one bayonet fracture of the clavicle, and there were four sabre cuts and two bayonet perforations of the scapula, but gunshot injuries of these bones were very numerous, there being no less than 2280 cases recorded in which one or both were involved. The *clavicle* alone was fractured in 527 cases, of which 44 proved fatal, a mortality of but a little over eight per cent.; more than half of the patients were returned to duty, but it is probable, as remarked by Dr. Otis, that in many of these cases the bone was simply grooved or chipped and not completely broken through. *Excision of the clavicle* was practised in a number of instances, Dr. Otis's list giving two examples of total extirpation (both fatal), five of partial excision in cases in which projectiles had entered the thorax, and thirty-one of partial excision for uncomplicated gunshot injury. In foot-notes, Dr. Otis has also collected from various sources thirty cases of complete extirpation, and thirty-eight of partial excision of the clavicle. The thirty-one uncomplicated army cases furnished six deaths and fifteen discharges for disability. We quite agree with Dr. Otis's conclusion—

“That extirpation of the clavicle for shot injury is seldom if ever called for; that, as in shot fractures of other long bones, detached splinters should always be immediately extracted, and that, as elsewhere, necrosed osseous fragments should invariably be removed at the earliest practical moment.”

Gunshot fractures of the *scapula* alone were noted in 1444 cases, in 1423 of which the results are known. The fatal cases numbered 177, giving thus a death-rate of over twelve per cent. In twelve instances *both* scapulæ were broken without penetration of the chest, and in most of these cases the spinous processes of the upper dorsal vertebræ were likewise fractured. In one melancholy case styptics were unavailingly employed to arrest repeated hemorrhages, and the attending surgeon then bethought him of amputating at the shoulder-joint as a preliminary to the radical measure of extirpating the scapula; but the preliminary operation by itself proved too much for the unfortunate patient, who quickly died before the ingenious operator had time to carry out the proposed treatment. No instance of complete *extirpation* of the scapula was recorded during

the war, but such a case has since occurred to Prof. F. H. Hamilton, being "a solitary example of a successful extirpation for the results of shot injury of the scapula with preservation of the upper extremity." *Partial excisions* were represented by forty-nine cases, more or less deserving the name, of which thirteen were fatal. There were also ten cases of partial excision of both clavicle and scapula, two of the cases ending in death.

In a foot-note Dr. Otis refers to the statistics of scapular extirpation, quoting Dr. Stephen Rogers's table of twenty-five cases (in which, however, he points out that the cases attributed to Gætani Bey and Larrey are identical, thus reducing the number to twenty-four), and adding seventeen additional instances, including Prof. Hamilton's case already referred to, and thus giving a total of forty-one.¹ Of these several were examples of simultaneous removal of the scapula and upper extremity, and, therefore, in our judgment, more properly to be regarded as *amputations above the shoulder* than as *excisions*; others again are instances of extirpation of the scapula subsequent to previous amputation at the shoulder, and should, we think, be classified separately from cases of scapular excision in which the arm is preserved.

We would offer the following as a list containing, we believe, all the cases hitherto recorded of *extirpation of the entire scapula, the arm being preserved*; the case attributed to Dr. Crawford, of Ayr, is rejected by Dr. Otis for want of sufficient details: twenty-eight cases; twenty-one recoveries; five deaths; two not terminated; the operators were Langenbeck, Syme (two cases), Heyfelder, Jones, Hammer, Schuh, Michaux, Hamilton, Rogers, Pollock, Steele, Esmarch, Schuppert, Michel, Spence (two cases), King, Logan, O'Grady, Schneider, Wood, Omboni, MacCormac, Pirrie, Bird, Crawford, and an anonymous case numbered (5) in Dr. Otis's table.

Extirpation of the scapula, subsequent to amputation of the upper extremity, appears to have been performed in eleven cases, with six recoveries, one doing well when the report closed, and four deaths, two of the latter, however, from a recurrence of malignant disease after considerable intervals of time; the case attributed by Dr. Stephen Rogers and by Dr. Otis to the elder Crosby must, on the authority of Dr. A. B. Crosby, be transferred to the list of amputations above the shoulder, both the scapula and the upper extremity having been removed on the same occasion; the operators in the eleven cases in this category were Mussey, Rigaud, Fergusson, Buck, Langenbeck, Busch, Krakowizer, Stimson, Jeaffreson, Soupart, and Deroubaix.

Amputation above the shoulder (the arm, with part or all of the scapula, and sometimes part of the clavicle, being removed at one operation) appears to have been performed in thirty-six cases (including seven done during the war, and hereafter referred to), of which twenty-seven recovered and nine ended fatally; the operators, in other than the army cases, were Cuming, Crosby, Gætani Bey, Twitchell, McClellan, Mussey, Lewis, Gilbert, Niepce, Syme, Fergusson (two cases), Buchanan, Jackson, McLeod, Watson, Charles, Young, Wishaw, Jessup, Esmarch, Parise (three cases), Hendry, Fayrer, Langenbeck, Hamilton, and one of the surgeons of the Pennsylvania Hospital.

We think our readers will agree with us that the record of these operations is almost too favourable to be unhesitatingly accepted; and

¹ Another case is attributed to Dr. Dysort, a Confederate surgeon, but the record is too imperfect to be of value.

we cannot resist a lingering suspicion that some operators have neglected to report their fatal cases.

Fifty-nine cases of partial excision of the scapula (in ten, portions of the clavicle having also been removed) were recorded during the war, and furnished forty-four recoveries and fifteen deaths; adding to these the thirty cases tabulated by Dr. Stephen Rogers, and four since reported by Boeckel and Fischer, we have a total of ninety-three cases, with sixty-four recoveries and twenty-nine deaths. These statistics show that, upon the whole, total is at least as successful as partial excision of the scapula; and that, therefore, in cases of malignant disease, the surgeon should not hesitate to prefer the more sweeping operation. In other cases, partial excision is for obvious reasons a more desirable measure, when the surgeon has the opportunity to choose between the two; and we are quite prepared, in the case of gunshot wounds, to approve Dr. Otis's conclusion, that—

“Although, as in shot comminutions of other flat bones, operative interference may occasionally be demanded, yet, weighing all the evidence, it is obvious that extensive excisions of the scapula for injury can seldom be required as primary operations.”

Wounds of the shoulder-joint are considered in Section Third. There were only 72 cases recorded of wound of the joint without bone injury, while there were 1328 cases complicated with fracture of the articulating extremities of either the humerus or the scapula. In round numbers, excision was adopted in about half of these cases, amputation in an eighth, and expectant measures in the remainder. Amputation and excision were, however, also resorted to in many cases in which the shoulder-joint was not immediately involved. The seventy-two cases of joint wound without fracture were all treated without operation, and only six ended fatally; ankylosis occurred in more than half of the survivors.

Expectant measures were employed in 505 cases of gunshot fracture, with 139 deaths, a mortality of 27.5 per cent. These figures certainly show a very favourable result, but Dr. Otis judiciously warns the reader against too hasty a conclusion adverse to operative interference; apart from the fact that the least serious cases were, of course, chosen for expectant treatment, in some the precision of diagnosis may be questioned, and in others such incisions and extractions of sequestra were made as were almost equivalent to excisions.

“The question of the safety and comparative advantages of attempting expectant treatment, after shot fractures of the articular extremities of the humerus and scapula, requires further investigation. It is proved that, under judicious management, the results of expectant measures as to life and limb may be most satisfactory. It remains to be shown that, under the ordinary conditions of war-surgery, immediate operative interference may not be the safest plan. While the opinion offered in my preliminary report of 1865 may have been expressed too emphatically, as deduced from insufficient data, it may still be held that the proportion of cases of shot fracture at the shoulder in which an expectant treatment is expedient, is comparatively small, and that recourse should generally be had to excision, unless concomitant injuries of the bloodvessels or nerves, or extended lesions of the soft parts, or of the shaft of the humerus, render amputation imperative.”

Excisions at the shoulder were reported in 885 cases, the results having been determined in all but nine. In 670, with 223 deaths (33.58 per cent.), the operations were performed for direct injury of the articulation, and in 215, with 83 deaths (39.15 per cent.), for shot fracture in

close proximity to the joint, or for consecutive caries or necrosis. In 42 cases, the head of the humerus and portions of the clavicle or scapula were excised, twenty primary operations giving two deaths (the result in one case not ascertained), eleven intermediate operations giving six deaths, and ten secondary operations giving two deaths; there were therefore ten deaths in the whole forty-two cases. Partial excision of the head of the humerus was done in 14 cases, with one death, and complete decapitation of the bone in 273 cases—175 being primary operations, with 56 deaths (32 per cent.); 55 intermediate operations, with 34 deaths (61.8 per cent.); 26 secondary operations, with 13 deaths (50 per cent.); and 17 operations of uncertain date, with one undetermined case, and four deaths (25 per cent.). The head of the humerus and portions of the shaft were excised in 517 cases, of which 293 were examples of primary operation, with 80 deaths (27.3 per cent.); 155 of intermediate operation, with 64 deaths (41.3 per cent.); 50 of secondary operation, with 12 deaths (24 per cent.); and 19 of operation of uncertain date, with two deaths (10.5 per cent.). There were, moreover, 39 cases, with 29 deaths, in which excisions were performed at the shoulder, but in which the parts removed were not definitely specified. Taking all the cases together, the death-rate in the examples of primary excision was 31.06 per cent., in the intermediate cases 46.4 per cent., and in the secondary cases 29.3 per cent. The operations of uncertain date gave a mortality of 31.1 per cent.

Beside the cases of excision represented by the preceding figures, Dr. Otis tabulates 201 cases derived from the records of the Confederate army; the results are definitely ascertained in only 75 of these (32 recoveries, 43 deaths), so that their mortality cannot be fairly estimated.

In only 14 of the whole 1086 cases of excision reported from both armies, was consecutive amputation required; eight of these cases terminated favourably, and six in death.

Amputation at the shoulder-joint was performed in 866 cases, 14 of these operations having been for complicated injuries of the soft parts (*vide supra*). Of the remaining 852 cases, 499 were examples of primary amputation, with 14 undetermined cases, and 117 deaths (24.1 per cent.); 157 being intermediate, with 72 deaths (45.8 per cent.); 66 secondary, with 19 deaths (28.7 per cent.); and 130 of uncertain date, with 11 undetermined cases, and 28 deaths (23.5 per cent.). In six of the successful, and one of the unsuccessful, primary cases, portions of the clavicle or scapula were removed at the time of the operation, so that these might be properly called amputations above the shoulder. Taking together all the examples of shoulder-joint amputation reported during the war, the death rate in determined cases was 29.1 per cent.

“The facts that have been adduced in this section,” says Dr. Otis, “appear fully to warrant the conclusions: 1. That in slight shot injuries of the shoulder-joint an expectant conservative treatment is justifiable. 2. If a ball is impacted in the head of the bone, or if the epiphysis is much comminuted, unless there is injury to the bloodvessels and nerves, or very grave injury of the other soft parts, primary excision should be practised. 3. Concomitant fractures of the acromial end of the clavicle, or of the neck or processes of the scapula, or of the upper third of the shaft of the humerus, do not necessarily contraindicate excisions at the shoulder. 4. Intermediary excisions should seldom or never be practised. If, in an attempt at expectant conservative treatment, intense suppurative inflammation arises, it should be combated by free incisions, drainage, emollient applications, etc., and every endeavour should be made to avoid

inflicting another wound upon the inflamed medullary tissue, and to await the secondary stage, before undertaking operative interference. 5. The after-treatment of securing comparative immobility and support of the limb and efficient drainage of the wound, and the ulterior after-treatment of judicious passive and active movements of the arm, are of essential importance in restoring the functions of the member. 6. Primary exarticulation of the arm at the shoulder is imperative in cases of shot lesions of the upper extremity of the humerus attended by injury of the axillary vessels and nerves, or by very grave injuries of the other soft parts in the vicinity of the joint; and may also be demanded when fractures of the humerus involving the shoulder are conjoined with severe injuries lower down in the limb. Circumstances may also justify primary ablation of the arm when there is little injury to the soft parts, and the epiphysis is untouched, if the humerus be so extensively shattered downward as to forbid excision, and fissures extend so near the joint that the section of the bone in its continuity cannot be practised without danger of arthritis. Intermediary exarticulation at the shoulder may be required in cases of hemorrhage, gangrene, or osteomyelitis; and secondary exarticulations for the same causes, and also for complete necrosis of the humerus."

Injuries of the shaft of the humerus form the subject of Section Fourth, which deals with no less than 8245 cases, exclusive of shot fractures involving the shoulder or elbow. In 357 cases, the results have not been ascertained, but the remaining 7888 furnish a large body of statistics for study. *Expectant measures* were employed in 3005 cases, the results in 45 of which were undetermined, and which gave 451 deaths, a mortality of 15.2 per cent. This category embraced a very few cases of gunshot contusion, and more of partial shot fracture of the humerus, with very many examples of complete fracture of every grade of severity. In numerous instances large sequestra were extracted, and yet pseudarthrosis very seldom ensued.

Excision in the continuity of the humerus was performed in 696 cases, though, as justly pointed out by Dr. Otis, many of these might probably with more propriety have been reported as examples of extraction of fragments. In 64 cases amputation was subsequently required, 49 times in the continuity of the bone, with 16 deaths, and 15 times at the shoulder-joint, with 11 deaths. The primary excisions numbered 487, the results in 16 being undetermined, and the fatal cases amounting to 145, thus giving a death-rate of 29.7 per cent. Intermediate excision was practised in 93 cases, with 29 deaths, a mortality of 31.1 per cent. There were 41 secondary excisions, of which only six proved fatal, a mortality of 14.6 per cent.; and 75 in which the interval between the time of injury and that of operation could not be ascertained, with 12 undetermined and 12 fatal cases, a mortality of 16 per cent. Of the whole 696 cases, 191 proved fatal, giving a death-rate for determined cases of 28.5 per cent. In the 477 cases of ascertained recovery, there were 99 in which "no bony union" was reported, and 65 recorded as examples of false-joint; moreover 37 of the successful cases were only saved by subsequent amputation, an operation which failed in 27 other instances.

"Such evidence warrants the assertion that early excisions in the continuity of the humerus after injury can seldom be justifiable, a conclusion at which European surgeons had already arrived from the experience of the Schleswig-Holstein and Danish wars, and which has been confirmed by more recent observations. . . . Examination of the details of many of the formal primary excisions in the shaft strengthens the impression that they were, for the most part, unnecessary and injurious."

Amputation of the arm for shot injury was practised in 5456 cases, 54

of these having been on account of complicated flesh wounds, 3685 on account of fractures limited to the shaft of the humerus, and 1717 on account of injuries involving the elbow or forearm. The results were ascertained in all but 183 of the whole number of cases, the deaths amounting to 1246, thus giving a mortality of 23.6 per cent. There were 3259 primary operations, with 602 deaths, or 18.4 per cent.; 902 intermediate operations, with 302 deaths, or 33.4 per cent.; 411 secondary operations, with 114 deaths, or 27.7 per cent.; and 884 operations of uncertain date, with 183 undetermined cases, and 228 deaths, or 25.7 per cent. These figures, as will be seen, fully confirm the accepted doctrine that primary amputations are the most, and intermediate amputations the least, successful.

The upper third of the arm was the seat of operation in 1952 cases, with 12 unascertained results, and 358 deaths, or 18.3 per cent.; the middle third in 1739 cases, with 9 unascertained results, and 284 deaths, or 16.3 per cent.; the lower third in 758 cases, with two undetermined results, and 197 deaths, or 25.9 per cent.; while the precise seat of operation was not reported in 1007 cases, with 160 unascertained results, and 407 deaths, or 40.4 per cent. The greater mortality which followed amputation in the *lower third* of the arm, as compared with other situations, has been observed in other campaigns; but has not, according to Dr. Otis, as yet been satisfactorily accounted for. As was the case with excisions of the shoulder, amputation on the left side was somewhat more successful than on the right; can this be explained by the worse effect on the *morale* of the soldier of loss of the right arm? It is a common remark of men severely injured in the left arm, that "it is lucky it is not the right." Among the important complications of amputation of the upper arm, were three ligations of the subclavian artery, with others of the axillary and brachial; consideration of these is reserved for a future chapter on Hemorrhage.

The unfavourable results of excision in the continuity of the humerus, which have already been adverted to, would seem to limit the surgeon in most cases of gunshot fracture to a choice between amputation and expectant measures. When the latter mode of treatment is determined upon, the most important point, after the removal of foreign bodies and loose fragments, and the suppression of hemorrhage, is to secure immobility of the limb without injurious circular constriction. This may be best accomplished, as pointed out by Dr. Otis, by securing the arm to the chest, interposing a suitable pad or cushion, such as that devised by Dr. Stromeyer, and which that eminent surgeon assured Mr. MacCormac he considered "the most valuable appliance he had invented during his life." The present writer may be permitted to mention that, taught by the late Dr. George W. Norris, he has for many years been in the habit of similarly treating, and with the best results, almost all fractures of the upper part of the humerus, whether simple or compound.

In Section Fifth are considered *Wounds and Injuries of the Elbow-joint*. *Bayonet and sabre wounds* were reported in a few instances, three of the former and six of the latter: all were successfully treated by expectant measures, but in several of the cases Dr. Otis regards the diagnosis as of doubtful accuracy. *Gunshot fractures* of the elbow-joint were observed in 2678 cases, with 513 known deaths, or a mortality in determined cases of 19.4 per cent. *Expectant measures* alone were employed in 938 cases, with 96 deaths (10.3 per cent.), but in at least 250 instances were supple-

mented by consecutive excision, and in as many if not more by consecutive amputation. Those patients, moreover, who recovered without operation suffered almost invariably from ankylosed or diseased joints (one of the few exceptions was in the case of the late Gov. Geary, of Pennsylvania), so that the actual results of expectant treatment were much less satisfactory than would appear from the bare statistical returns.

"The result as to the average usefulness of the limb after conservative expectant treatment is not flattering. . . . Among the survivors there were many examples of chronic arthritis, with caries and persistent fistulæ and exfoliations; many instances of paralysis and paresis, with shrunk and wasted limbs and contracted and powerless hands. The known instances of recovery with preservation of the functions of the joint were very few, and those with ankylosis in a favourable position, with freedom from disease about the joint and good use of the forearm and hand, were not numerous."

Excisions of the elbow, for shot injury, were practised during the war in 626 cases, the result in 10 being unknown, and the deaths numbering 146, the mortality in determined cases being thus 23.7 per cent., slightly more than the mean mortality of amputation in the upper arm, 23.6 per cent. There were 322 primary incisions, with four unknown results, and 68 deaths, or 21.3 per cent.; 197 intermediate excisions, with one unknown result, and 69 deaths, or 35.2 per cent.; 54 secondary excisions, with only five deaths, or 9.2 per cent.; and 53 excisions of uncertain date, with five unknown results, and only four deaths, or 8.3 per cent.

"In some of the cases returned as resections of the elbow, . . . the operations consisted in little more than the removal of detached fragments of bone. Such cases impressively illustrate the disadvantages of partial excisions, with limited division of the articular capsule, whereby, as Professor Esmarch observes, that feature of the operation which deprives the wound of its danger, the extensive severing of the ligamentous apparatus of the joint, is omitted."

In regard to the ultimate usefulness of the limb after excision of the elbow, Dr. Otis points out that the reports of pension examiners are often misleading, on account of their general tendency to exaggerate, from humane motives, the pensioners' disability. Many men are thus reported as more or less unfit to follow their callings, though they may actually have fairly useful limbs. The same source of error has been noticed in Germany by Professor Langenbeck. The secondary excisions performed during the war are seen to have been very successful; the numbers are, however, almost too small to warrant positive inferences, while it must not be forgotten that the secondary cases were in the nature of things selected, the worst cases perishing during the primary and intermediate periods.

In addition to the cases dealt with in the preceding paragraphs, Dr. Otis has tabulated 138 examples of elbow-joint excision derived from Confederate records. These gave 81 recoveries and 19 deaths, the results in the remainder being unknown. The mortality in determined cases was therefore only 19 per cent., a favourable exhibit which is explained by the fact that these statistics were mainly collected in Richmond, where many disabled soldiers congregated to await the action of retiring boards, etc.

If saving of life has not, as justly remarked by Dr. Otis, been effected by the introduction of elbow-joint excision as a substitute for amputation in military surgery, yet the advantages of the operation, as a means of saving useful limbs, remain unimpeached. We are glad to learn that Dr. Otis intends to revert to the question of the "end-results" of these excisions,

in the Third Surgical Volume, and to submit more ample details upon the subject than it is possible to give at the present time.

Amputation at the elbow-joint was performed in 40 cases during the war, and with but slight mortality, only three deaths having been recorded as against 36 recoveries, the result of one case being undetermined. It is to be observed, however, that five of the successful cases only proved so after reamputation.

From a full consideration of all the evidence adduced on the subject of gunshot wounds of the elbow, Dr. Otis formulates the following conclusions, which we quote for the benefit of our readers:—

“1. That, in shot wounds in young healthy subjects, attended with slight injury of the articular extremities of bones of the elbow, such as fractures of the olecranon, of the outer condyle, or of the trochlea, without much splintering and without lesion of important vessels or nerves, it is justifiable, in many instances, to attempt an expectant conservative treatment, keeping the injured extremity in entire rest, after removing any detached fragments or foreign bodies, in a semi-prone and very slightly flexed position, employing ice or other cold applications. If the inflammatory action becomes intense, the wound should be freely enlarged and the joint cavity fully laid open, and easy escape provided for the altered wound secretions by position and drainage-tubes. The strength should be sustained by a tonic regimen, and when the inflammatory stage has completely abated, and not before, if healing is slow, secondary excision or amputation may be hopefully resorted to. Unless all the favorable conditions mentioned are present at the outset, it would be safer to resort to primary excision or to amputation.

“2. In grave shot comminutions with lesion of the principal vessels or nerves, amputation should be practised immediately after the reception of the injury.

“3. In severe shot fracture, without extensive lesions of the soft parts, the joint should be freely exposed by a longitudinal posterior incision, and the full extent of the fracture ascertained. Unless there is extraordinary fissuring, the injured joint ends should then be sawn off as close to the limits of injury as possible, save that the bones of the forearm should be shortened to the same level. If the splintering extends very far, or if there is reason to believe that the humeral vessels are injured, though not wounded, the incisions should be so modified as to convert the operation into an amputation.”

Section Sixth treats of *Wounds and Operations in the Forearm*, an important category, since it is estimated that wounds of this region constitute between four and five per cent. of all wounds received in battle that are not immediately fatal. *Punctured* and *incised wounds* of the soft parts of the forearm were previously considered, but there are here seven cases referred to in which one or both bones were divided by blows from sabres; one, complicated with sword wound of the skull, proved fatal, and two of the others recovered with pseudarthrosis. *Contusions* and *partial fractures* were occasionally met with, ten cases of the former and thirty-two of the latter having been recorded. Of complete *shot fractures*, involving one or both bones, 5194 cases were observed, the results having been ascertained in all but 78, and the deaths numbering 482, a mortality for determined cases of 9.4 per cent. The death rate, when both bones were broken, was 11 per cent.; when the ulna alone was fractured, 8 per cent.; and when the radius only was implicated, 7.9 per cent.

Expectant measures were employed in the majority of cases, and in those in which the results were ascertained (2943) gave but 191 deaths, or 6.4 per cent. The death rate for fracture of both bones was 7.4 per cent.; for those of the ulna, 5.6 per cent.; and for those of the radius, 5 per cent.

Excision in the continuity of the bones of the forearm was practised in 986 instances, the number of deaths being 109, or 11.2 per cent. of determined cases. *Primary excisions of both bones* were done in 40 cases, with six deaths and twelve subsequent amputations; and "not a single really good result is noted among the twenty-two patients who retained their limbs." Primary excision of the *ulna* succeeded in 290 cases, and primary excision of the *radius* in 256; in nine successful cases, the bone operated upon was not specified. There were thus altogether 589 cases of recovery after primary excision in the continuity of the forearm, to be put against 71 fatal cases, and five in which the results were not ascertained; the death rate for determined cases was thus 10.7 per cent. *Intermediate excisions* were done in 149 cases, with 29 deaths, or 19.4 per cent.; both bones were excised successfully in nine cases, the *ulna* alone in 64, and the *radius* alone in 47. There were 40 *secondary excisions*, with 36 recoveries and four deaths, or 10 per cent.; and 132 excisions of uncertain date, with 16 undetermined cases, and only five deaths, or 4.3 per cent. The results of formal excisions in the continuity of the forearm, during the war, were so unsatisfactory as to have led Dr. Otis to condemn this mode of treatment in no measured terms, and to express a wish that the operation, as a primary procedure, "should be banished from the practice of military surgery." With great hesitation we would venture to express the opinion that this condemnation is too sweeping; the present writer has himself in one case had occasion to resort to primary excision of a portion of the *radius* for gunshot fracture, and he thinks with benefit to his patient. There can be no question, however, that the operation should be reserved for exceptional cases, and that extensive removals of bone are always undesirable.

Amputation of the forearm for gunshot injury was performed in 1747 cases, the results having been ascertained in all but 13, and the number of deaths having been 242, or 13.9 per cent. There were, in the upper third, 491 cases, with 66 deaths (13.4 per cent.); in the middle third, 676 cases, with 75 deaths (11.1 per cent.); in the lower third, 452 cases, with 56 deaths (12.4 per cent.); and at points not definitely indicated, 128 cases, with 45 deaths (37.8 per cent.). The *primary* operations numbered 1007, with 97 deaths, or 9.6 per cent.; the *intermediate* operations 450, with 106 deaths, or 23.5 per cent.; the *secondary* operations 184, with 29 deaths, or 15.7 per cent.; and the operations of uncertain date 106, with 13 unknown results, and 10 deaths, or 10.7 per cent. In seven of the successful primary cases both forearms were amputated. Dr. Otis's study of the records of both our own and other modern wars leads him to believe that—

"Except in the rare instances in which the tissues are almost disorganized, shot wounds and fractures of the forearm should be, in Loeffler's phrase, 'relegated to the domain of the limb-conserving art.'"

Wounds and Operations at the Wrist form the subject of Section Seventh. Gunshot fractures of this part were observed in 1496 cases during the war, and proved the cause of death in 193 instances, the mortality of determined cases being 12.9 per cent. *Expectant measures* alone were employed in 716 cases, with nine unknown results, and only 54 deaths, a mortality of 7.6 per cent. As justly remarked by Dr. Otis, however, these figures give too favourable a picture, as in many cases expectant measures failed, and excision or amputation was ultimately resorted to with an excessive proportion of fatal terminations. *Excision*

was practised in 96 cases; total excision in six, with one death, and more or less extensive partial excision in 90, with 14 deaths, a mortality of 15.5 per cent. There were 51 primary operations, with seven deaths (13.7 per cent.); 24 intermediate operations, with six deaths (25 per cent.); and 16 secondary operations, with two deaths (12.5 per cent.). In ten cases the period of operation was not specified, and of these, five were recoveries and five undetermined. In thirteen of the whole number of cases, consecutive amputation was required. *Amputation* at the wrist for shot injury was practised in 68 cases, with one unknown result, and seven deaths, or 10.6 per cent. One man submitted to amputation of both wrists. The operations were primary in 55 cases, with five deaths; intermediate in seven, with one death; and secondary in five, with one death. Both the period of operation and the result are unknown in one case.

Section Eighth, and last, deals with *Wounds and Operations in the Hand*. Gunshot fractures of the hand were observed in 11,369 cases, of which 316, or 3.1 per cent., terminated fatally. Excisions of the metacarpal bones were practised in 116 cases, of which 10 proved fatal. Nearly 8000 amputations of the fingers gave a mortality of less than 3 per cent.

"It is a grateful reflection," says Dr. Otis, in conclusion, "that while this volume has treated largely of the various modes of operative interference often indispensable in the surgery of war, the general teaching deduced from the multitude of facts tends, not only in regard to the hand, but in relation to every region, to justify and encourage an enlightened conservatism."

We have thus come to the end of our task, and, if we have succeeded in giving our readers even a faint notion of the value of Dr. Otis's volume, and of the immense store of carefully recorded facts which it contains, our labour has not been in vain. All that has been said in these pages or elsewhere in praise of the first volume, can be more than duplicated in commendation of the second. On some few mooted points of practice we have ventured to differ from the advice given by the author, and we have pointed out one or two trifling errors; but our wonder is not that a few mistakes have crept into Dr. Otis's book, but that a work of such magnitude should be so singularly accurate. The typographical execution of the volume is all that can be desired, while the thirty-five large plates (many of them beautifully coloured), and the seven hundred and forty-seven finely executed wood-cuts, mostly original, and others judiciously selected from works inaccessible to the ordinary reader, add inestimably to its value and usefulness. From beginning to end the volume reflects the highest credit upon all engaged in its production.

J. A., JR.

ART. XXI.—*Elements of Human Physiology*. By D. L. HERMANN, Professor of Physiology in the University of Zürich. Translated from the Fifth edition by ARTHUR GAMGEE, M.D., F.R.S., Brackenbury, Professor of Physiology and Histology in the Owens' College, Manchester; Examiner in Physiology in the University of Edinburgh. 8vo. pp. 576. London: Smith, Elder & Co., 1875.

PHYSIOLOGY is to-day certainly one of the most progressive departments of medicine.

As an evidence of the activity in physiological circles we may notice the interesting fact, that our book-lists contain no less than nine volumes, each giving a systematic account of the physiology of man, and each of which has been issued in its present form within the past twelve months; in fact, more than one-half of them bear the impress of Centennial '76!

We have presented in the volume before us a translation of Prof. Hermann's well-known *Elements of Human Physiology*, which, having reached its fifth edition since its appearance in 1863, has for a long time been the recognized text-book of the German schools. We have reason to congratulate ourselves that this, the work of one of the most earnest and distinguished laborers in the field of physiology, has been brought within the reach of the English reading profession.

From the translator's preface we learn that the present translation "was actuated by the conviction, shared in by nearly all teachers, that an urgent need existed for an English text-book, which should represent the actual state of the science." This conviction can hardly be shared in by the American profession. Within a comparatively recent period we have seen the completion of Flint's classical work and the birth of his text-book: the translation of Prof. Küss's lectures by Dr. Amory, and a largely rewritten edition of Dalton's admirable treatise.

However, we are prepared to give this new work a cordial welcome, the more cordial, because it does supply a want, not met by any of the late publications. Physiology has lately stood in need of some systematic treatise to harmonize her teachings and nomenclature with the recent developments in philosophy. This want is partially supplied by Professor Hermann. There is no other treatise on the subject which accepts the doctrine of conservation of energy or the correlated forces, or which attempts to build up a doctrine of life on the foundation offered by the recent developments in the physical sciences, so fully as the volume now under review.

Before speaking of the many excellent and distinctive features of this work, let us attempt an answer to the question: How well does Professor Hermann's "*Elements*," fulfil the purpose of its translation: that is, to furnish a text-book for the use of medical students? After careful consideration we must say that, in our opinion, the present work will not be a popular or useful one to place in the hands of the average student.

We draw the proof of our opinion, in part, from Dr. Gamgee himself, who writes in his preface:—

"The very condensed style of the whole work, the immense number of facts brought together under every section, and the constant assumption on the part of the author that the reader is possessed of varied and accurate knowledge of the sciences upon which physiology is based, may tend to dismay the student who brings to its study but a scanty preliminary education or a lukewarm zeal,

but this is a result which cannot be avoided by any author who treats his subject in a thorough manner."

Although Professor Hermann has christened his book "Elements of Human Physiology," it is by no means an elementary treatise; on every page it assumes a rudimentary knowledge of the subject, and very frequently simply refers by title (so to speak) to experiments familiar to few other than professed physiologists. Introducing into our nomenclature many of the terms of physical science, some even of late coinage, and presupposing a knowledge of physics and of organic chemistry which it is certainly not the fortune of the average student to possess, he will oftentimes find himself becalmed in a fog of doubt.

The very brief and necessarily imperfect description of the physiological anatomy of the several organs constitutes in our mind a very serious defect. Truly, it may be said that physiological anatomy belongs legitimately to histology, but that good old adage of our author's native tongue, "*Die Weiderholung ist die Mutter Erlernung*," should never be lost sight of in our intercourse with students. Besides, the belief is stamped with the seal of authority as old as Galen himself, that the study of function is inseparably linked with that of structure. Haller, the father of modern physiology, calls physiology "*anatomia animata*," and proved his faith by devoting thirty years of his life to anatomical pursuits before publishing his "*Elementa Physiologiæ Corporis Humani*."

The function of nerves is scarcely intelligible without a knowledge of their anatomy; certainly our author's discussion of the cranial nerves would have been more satisfactory, had he given more attention to pointing out their anatomical peculiarities, their distributions and anastomoses.

Again, the arrangement of the subject-matter does not impress us favourably; it is as unnatural as it is unique. For instance, we find the description of the digestive fluids separated from the chemistry of digestion by discussions of the tears, milk, sweat, urine, and other secretions. Absorption is treated of in detail before the chemistry of digestion is reached, and the discussion of food is introduced some forty pages after the subjects of digestion and absorption have been considered. We cannot commend the judgment which devotes more space to the discussion of the muscular system than is given to the combined discussion of the blood, and its circulation, and the whole subject of digestion. Again, fifteen lines suffice to dismiss the physiology of the heart sounds, while nearly as many pages of abuse mathematics confuse the student in his study of vision.

Finally, we cannot but look upon the almost entire absence of diagrams and illustrations as an unfortunate omission in a text-book. We are all, perhaps, too prone to smile at the familiar plates which usually greet our eyes on opening a new volume; but we must not forget, that, though they may be old to the scarred veteran, they are useful and new to each successive generation of raw medical recruits.

While we thus limit its usefulness as a text-book partly from its own defects and partly from the defects of our system of medical education, we wish to accord it high praise as an exposition of modern physiological thought.

From this latter standpoint let us hastily call attention to some of the distinctive features of Professor Hermann's work; and first, let us remark that the peculiar arrangement and method already mentioned are so different from any other treatise on the subject, that we lose the aid of com-

parison, and find it very difficult to give a correct idea of the work without entering more into detail than our space will admit.

The keynote of the volume before us is found in the opening paragraph of the author's introduction, which we quote :—

"Formerly an attempt was made to explain the peculiar processes which have their seat in the animal organism, by supposing it to be endowed with properties special to it, and heritable, depending upon a supposed '*vital force*.' This vague conception has, however, been abandoned since the laws of inorganic nature have been discovered to preside over the most thoroughly investigated processes of life, and especially since the application to the organic world of a great principle of modern science has taught us the relations which exist between the changes in the matter and the forces of organized beings. Relying upon this knowledge, we believe the forces of living are the same as those of inanimate bodies, and that they obey the same laws, and consequently, that it will ultimately be possible to explain the hitherto incomprehensible phenomena of living beings, particularly their morphological processes, by physical and chemical laws. This conception possesses, quite apart from its probability, the great merit of introducing into the study of organic nature more precise views and more active research, and, although it has not been rigidly proven, will, in the present work, tacitly underlie the exposition of the processes of the human organism."

The work contains 576 large octavo pages, and is divided into four parts, which treat respectively :—

- I. The Exchanges of the Matter of the Organism.
- II. The Activities or Energies of the Body.
- III. The Liberating Apparatus: The Nervous System.
- IV. Origin, Development, and Death of the Organism.

Part I. is introduced with a brief account of the chemical constituents of the body. The usual classification based on the origin of these substances is here discarded, and instead, we have a classification based upon the chemical affinities of the several constituents. The chapter is illustrated by imaginary formulæ for the composition of many of the chemical compounds, which require the reader to refresh his organic chemistry if he would grasp in detail this really excellent introduction. Chapter I. passes directly to the consideration of the "Blood and its Circulation."

After commenting upon the fact that the blood is the medium by which the material interchanges between the constituents of the body and the external world take place, and that presumably every part of the body which participates in these chemical changes is constantly supplied with this life-giving fluid, we have the following reason assigned for the peculiar arrangement of subjects to which we have already called attention :—

"It is, therefore, expedient, in the exposition of the chemical changes which occur in the body, to consider the blood as its natural centre, and to classify the various processes as sources of expenditure or gain to the blood, before treating of the interchanges between the matter of the whole organism and the external world."

The "Gases of the Blood" are treated in an unusually thorough manner, and this discussion forms one of the very interesting portions of the chapter. In speaking of Hæmoglobin, to which is linked all of the loosely combined oxygen in the blood, we find the following statement, which is certainly not in accord with the observation of others :—

"Solutions of O-Hæmoglobin exhibit, when examined by means of the spectroscope, two absorption bands situated in the green (?) portion of the spectrum. Solutions of reduced hæmoglobin, on the other hand, exhibit a single, less-defined band, which occupies the interval between the two first bands."

The oxygen of the blood, owing to the readiness with which it is yielded up in the presence of oxidizable substances, is thought to be present in the form of active oxygen or ozone.

"The following properties of blood appear to favor this view: 1. Both the blood-corpuscles and hæmoglobin are so-called 'ozone-transferers,' that is they possess the power of immediately transferring ozone from substances in which it is present (as turpentine which has been kept for a long time) to readily oxidizable substances (ozone reagents, such as tincture of guaiacum, which becomes blue by oxidation, His, Schœnbein); for this reaction the presence or absence of oxygen in the blood is of no importance (for instance, it may be saturated with CO).

"2. Blood and hæmoglobin can themselves ozonize oxygen, so that in the presence of air they can cause guaiacum tincture to become blue (A. Schmidt): if the blood itself contain oxygen, the presence of air is not necessary: it is necessary if the blood has been saturated with CO (Kühne and Scholz). On the activity of its oxygen depends the decomposition of sulphuretted hydrogen by blood."

Under the "Death of the Blood" are described briefly the complex chemical changes which it undergoes in dying, viz., coagulation, acidification, deoxygenation, and calorification. Prof. Hermann approves the theory of A. Schmidt as regards the formation of fibrin: the combination of the fibrinoplastic substance and fibrinogen being due to a ferment developed during the death of the blood. The occurrence of coagulation is believed with Brücke to be the "result of the cessation of an influence exercised constantly upon the blood during life, by the living walls of the vessels. . . According to our present views of fibrin-formation, Brücke's law would be expressed as follows: the influence of the living vascular wall is to hinder the formation of the fibrin ferment, or to destroy it continuously as soon as it is formed."

The influence of the nervous system on the circulation of the blood is very well set forth in the eight pages allotted to the discussion. The innervation of the heart is described under the heads of Intracardiac Centres, Inhibitory Nerves, and Accelerating Nerves.

The intracardiac centres, to which the movement of heart is partially due, are supposed with great probability "to reside in the ganglionic cells (connected together by nerve fibres), which are lodged in the muscular substance of the heart, particularly in the septum between the auricles and at the junction of the auricles and ventricles." The *automatic* rhythmical contraction, and indeed the whole process of the heart's contraction from the auricles to the ventricles, is believed to be caused by these centres.

In speaking of the accelerating nerves, Prof. Hermann concludes that there does exist a system of nerve fibres which accelerate the heart's action, and the centre from whence these fibres proceed is placed in the medulla oblongata. That the vagus contains accelerating as well as inhibitory fibres is established by the fact, which has been recently shown by Schmiedeberg, that in poisoning by atropia, irritation of the vagus causes the heart to beat *more quickly*.

In Chapter II. is introduced the discussion of the various secretions as "Sources of Loss to the Blood." Secretion is here used in its widest sense, including all those processes in which substances quit the blood in an altered or unaltered form.

The secretions are divided into—

"1. Those liquids or gases derived from the blood, which exude from the internal or external surfaces of the body. Those yielded by internal surfaces (in

cavities or canals) called secretions in the restricted sense, are destined for particular uses (*e. g.* in digestion), and are for the most part again taken up by the blood after undergoing a certain amount of change. Those yielded by external surfaces—called ‘excretions’—are, on the contrary, lost to the body, although certain of them (*e. g.* the sebaceous and sudoriparous excretions) have certain functions in connection with the surfaces where they appear.

“2. Those liquids derived from the blood which bathe the tissues of the body, parenchymatous juices, muscle juice, the fluid moistening connective-tissues, etc.”

It is here taught that there is no essential difference between a secretion and an excretion—the fact of their being respectively liberated at internal and external surfaces proving nothing. In fact, the only difference between parenchymatous and free secretions seems to be that the former remain inclosed in a fine cellular network, while the latter quit their place of origin by passing through a layer of gland cells.

The analyses of the “Individual Secretions” which follow under the grouping of A. Parenchymatous tissues and their secretions: B. Fluids of cavities; and C. Glandular secretions, are excellent *résumés* of our knowledge of the composition, manner of secretion, and use of these fluids. We will here only call attention to the author’s views upon the disputed uses of bile:—

“As animals with biliary fistulæ quickly grow lean, provided they are prevented from devouring the bile which escapes, it is supposed that the greater portion of the bile is reabsorbed in the intestines. The ultimate destination of the reabsorbed biliary matters is, however, not known; nor have the other circumstances which help to explain the starvation of the animals from which the biliary secretion is removed been completely eliminated from the question. Moreover, in the normal condition, all the biliary substances are found in the feces in considerable quantities—the colouring matters which colour the feces, bile-acids, mucus, cholesterin, etc.

“The bile-acids, especially taurocholic acid, undergo, in the lower part of the intestinal tube, a hydrolytic decomposition; there being found in the feces, therefore, glycocholic acid, cholic acid and their anhydrides, choloidic acid, and dyslysin (Hoppe-Seyler). The reabsorption of the specific constituents of bile is therefore doubtful.

“Unlike all the other secretions connected with the digestive apparatus, bile is probably of no importance in digestion proper (*i. e.*, in the preparation of food for absorption). The one property it possesses, which is of value for that purpose, viz., that of emulsifying fats, is shared by it with other secretions which possess it in a far higher degree (pancreatic and, perhaps, intestinal juice). Solutions of peptones are precipitated by bile—a circumstance the importance of which will be spoken of in the next chapter. The importance of bile physiologically appears to be chiefly in regard to the absorption of fats. Bile (and the salts of the bile-acids), for instance, renders possible both filtration of fats through membranes under slight pressure, and diffusion between fats and watery solutions (von Wistinghausen), probably because it occasions the simultaneous imbibition of both (a condition of diffusion) in the form of soapy solutions. It renders easier also the passage of fats through narrow (capillary) tubes. Bile is also said to induce contraction of the muscular fibres of the villi (Schiff), and thus again to assist in the absorption of fats. It appears, moreover, to prevent putrefactive decomposition of the contents of the intestine.”

Chapter III. treats of the “Reception of Material into the Blood.” In the discussion of the preparation of food for absorption, the chemistry of digestion is disposed of in a manner not at all satisfactory.

Chapter IV. gives an account of “The Gaseous Interchanges (Income and Expenditure) of the Blood.” The chemical processes which are con-

cerned in the distribution of gaseous substances in the animal body are designated by the term Respiration, to which the succeeding twenty-five pages are devoted. This makes one of the most thorough and clearest discussions in the book.

The lungs are regarded by Prof. Hermann, both in structure and function, as a racemose gland with a gaseous secretion, the excretory duct of which is the trachea. Since the blood is the important agent in the interchanges of oxygen and carbonic acid gas taking place in the economy, when this exchange is made with the surrounding air or water, it is known as "external respiration;" on the other hand, when the blood and the animal tissues are the factors, the process is called "internal respiration."

External respiration is caused largely, if not entirely, by the difference in tension between the gases of the blood and the external atmosphere; and hence then follows an admirable statement of the tension of the respiratory gases under different circumstances.

Our author locates the seat of internal respiration in the tissues themselves, believing that the view which places the seat of oxidation within the capillaries is improbable, because oxidation processes are so closely linked to the functions of organs that they must occur within them.

The appendix to this chapter contains some exceedingly valuable statements on the respiration of foreign gases.

Having thus far considered the causes of loss and gain to the blood, Chapter V. points out the means by which the blood retains its integrity. The interest of this chapter centres chiefly around the author's teachings as to the origin and development of the blood corpuscles.

While admitting that chemical changes in the constituents of the blood corpuscles are possible without any simultaneous morphological change, he believes the burden of proof is in favour of the birth and death of successive generations of corpuscular elements.

"1. The colourless blood corpuscles are identical with the lymph cells, but probably originate in new-born animals almost entirely in the *lymphatic glands* and *follicles* (as well as in some apparently similarly constructed organs, as the *thymus* and *thyroid* glands), in the *spleen* and the *marrow of bones* (Neumann). The cells which are made in the first-named organs are poured into the blood with the lymph; those which originate in the spleen and the marrow of bones, on the other hand (with the exception of those from the splenic follicles, which appear to belong to the lymphatic system), are directly mixed with the blood, in part, after being already converted into red corpuscles.

"The new formation of colourless blood cells appears to be thus shared by several formative organs, so that one can replace or supplement the other. This conclusion is drawn from the fact that extirpation of any of these organs (spleen, thymus, lymphatic glands, etc.), is followed by no bad consequences to the body, but is compensated for by a vicarious enlargement of the remainder. When, however, several of these organs are extirpated at the same time, life is endangered.

"The conversion of colourless into red blood corpuscles appears to occur generally throughout the blood, although it has only been directly demonstrated in the spleen, the venous blood of which contains numerous transitional forms, and in the marrow of bones. The chemical transformation upon which it depends, viz., the origin of hæmoglobin, is unknown; it is affirmed that this substance crystallizes with peculiar readiness in the newly-formed red corpuscles (Funke). Hæmoglobin appears to originate under the influence of oxygen, inasmuch as lymph and organs containing lymph are seen to assume a red tint on exposure to air (Virchow, Friedreich). The morphological change consists, according to the received view, in a disappearance of the nucleus, which is followed by a general flattening of the cell, which becomes red; at the

same time the corpuscle appears to permit of diffusion taking place into it more and more readily. The young cells which have just become red, as they are found in splenic and hepatic venous blood, swell but slightly in water, and are not as decidedly flattened as the ordinary older blood corpuscles, which are easily destroyed by water, are disk-shaped, and are also larger. In the frog the passage of colourless into red blood corpuscles can be directly observed to occur in blood which has been drawn from the body (v. Recklinghausen). The transitional forms which originate in this process are also observed in the circulating blood."

The red cells very likely meet their death in all those organs in which colouring matters originate, since, probably, hæmoglobin forms the base of all animal colouring matters.

In the method of treating Part II., on "The Activities or Energies of the Body," are reflected the distinguishing features of Prof. Hermann's book. We can probably give no better idea of the method of discussion here employed than by quoting from the Introduction:—

"In the general Introduction to this work it is stated that the animal body is the seat of transformations of potential into kinetic energy. It may be stated generally that the potential energy of the body is associated with two kinds of matter, widely separated from one another, viz., atmospheric oxygen on the one hand, and the oxidizable constituents of the body, which enter it as food, on the other. Energy-yielding substances are, therefore, being continuously introduced into the body. It has further already been stated, that the products of the combination of the above-mentioned different kinds of matter—*i. e.*, oxidation-products—are continually being thrown out of the body. Similarly it has now to be stated that the energy which has become kinetic in the animal body is continually being transferred from it to bodies existing in the medium outside and independent of it. Just as, however, the expenditure of the matter of the body is always a little below its income, so also the expenditure of energy is always below its income, for the organism always contains a certain store of energy, part of which is potential in its yet unoxidized constituents, part of which is kinetic—its heat. The transformations of the energy of the body run side by side with the exchanges of its matter. As in the preceding chapter, the income and expenditure of the matter of the body has been discussed and compared, the same task must now be undertaken in reference to its energies; while these must, as far as possible, be brought into relation with the exchanges of matter. The scanty knowledge yet possessed on this subject merely permits of the discussion of some of its salient points."

Recognizing the fact that the potential energy of the oxidizable alimentary constituents can be expressed in units of heat, we have first pointed out the fact that by experimentation the heat value of many of the alimentary substances has been determined. Oxidation, though not the only, is the most important process in the transformation of potential into kinetic energy—*i. e.*, the liberation of energy.

This kinetic energy may take the form of heat, electricity, or mechanical work. When the body is at rest, all these forms of energy are transformed into a single form—*heat*. During the performing of work, there is, in addition to that which is being produced during rest, an increased quantity of kinetic energy developed within the muscles, and which assumes the form of heat and mechanical work. All the potential energy of the food ingested passes as kinetic energy to the outer world, with the exception of the small quantity of energy lost by the organism in the imperfectly oxidized excretæ—milk, urea, etc.

This leads our author to the discussion of the relation between diet and work, which is at present so largely engaging the attention of physiologists:—

"In order to form a judgment as to the article of diet which would best supply the increased consumption due to any given act, we should require to know the constituent which principally undergoes oxidation during that act. The most direct way to acquire this knowledge would appear to be to study the organs, as, *e. g.*, the muscles, in which the various manifestations of energy are observed, and in which the oxidations proceed. As, however, this department of physiology is yet little developed, we must satisfy ourselves with a study of the changes in the excretions which correspond to increased evolution of kinetic energy. Especially has the amount of urea to be studied as evidence of the oxidation of nitrogenous bodies, and the amount of carbonic acid as expressing the oxidation-processes of the body in general.

"In consequence of doubtful statements (especially one which asserted that muscular activity increased the excretion of urea), the view was for a long time promulgated that only those nitrogenous constituents of the body which enter into the composition of the tissues are made use of in the production of mechanical work. It was supposed that no heat was developed from these nitrogenous constituents until by processes of decomposition they had furnished non-nitrogenous substances. The non-nitrogenous constituents, on the other hand, were supposed to be simply employed in the production of heat. Upon these hypotheses was based a classification of foods, according to their uses. . . . Since it has been ascertained, however, that the excretion of urea is not increased during mechanical work, this hypothesis has fallen to the ground; and the importance of the numerous considerations opposed to it is now fully recognized. Amongst these the following must be mentioned (Traube):—

"1. That even with a food which is very poor in nitrogen (vegetable food), a considerable amount of mechanical work can be performed; the majority of beasts of burden are herbivorous, and bees, though fed merely on honey, are continually in motion. Such facts as these could only be brought into harmony with the old theory by supposing that the mechanical work of the body, even when it attains a high magnitude, is insignificant in amount when compared to the heat formed—a view which has already been combated.

"2. That cold-blooded animals, and even animals and men inhabiting hot zones, and whose heat production can only be very small, yet live, in great part, on a vegetable diet, containing but little nitrogen.

"3. That carnivorous animals, in spite of the small quantity of non-nitrogenous food which they consume, have sufficient heat generated within them, even when they do not perform much mechanical work.

"4. It has, lastly, been directly ascertained that the albuminous bodies which are consumed in a given time (calculated from the amount of urea excreted) are not by any means capable of accounting for the work done during the same time, even when the heat of combustion of those bodies was calculated extravagantly high. (Fick and Wislicenus.)

"With this fact the circumstance is in harmony that the inhabitants of mountainous districts prefer to take fat and sugar as provisions when they have arduous journeys to perform. We cannot, therefore, point out any act accompanied with the evolution of kinetic energy, for which the consumption of a particular kind of food (nitrogenous food) is absolutely necessary."

The author does not seem to be familiar with the thoroughly scientific observations made by Prof. A. Flint, Jr., on the pedestrian Weston, in reference to the excretion of nitrogen during work.

The liberation of energy in the form of movement requires for its exhibition a peculiar apparatus—the muscular system—and Chapter VIII. is devoted to the discussion of this apparatus. This subject is a favourite one with Professor Hermann, and one, too, in which his name has long been familiar to the profession. Almost every page of the eighty devoted to the muscular system, bears evidence of his original work, either in the enunciation of a new theory or the discovery of a new fact. There is probably no work on physiology in the English language which contains

so full an exposition of the phenomena associated with muscular activity as the volume before us. After describing the structure of muscles, including the recent views of Krause, Hensen, Flögel, Engelmann, and others, the details of which are still in dispute, and pointing out the chemical constituents, the phenomena of muscular tissue are grouped under the three conditions in which it may and does show itself—a state of rest, of rigor, and of activity.

Respecting the chemical processes taking place in muscle at rest or in activity, after alluding to the fact that muscular tissue continually converts arterial into venous blood, the remarkable statement is made that this gaseous interchange (the use of oxygen and the formation of carbonic acid) is not a vital phenomenon, but simply a phenomenon of putrefaction—"simply takes place side by side."

It is, however, admitted that since muscles retain their vitality somewhat longer in an atmosphere of oxygen than in an indifferent gas, some absorption of oxygen connected with their function must take place, which is, nevertheless, too small to account for the gaseous exchanges.

But as the same exchange of oxygen and carbonic acid is exhibited by muscle in a state of rigor as by living muscle, this cannot, in the majority of cases, be considered as the result of functional processes, but must be regarded as due to putrefactive change, which, in excised muscles, takes place at the surface and at the exposed transverse sections.

All through the discussion it is insisted that, very probably, the chemical changes occurring during rigor and contraction are identical. Now the amount of carbonic acid and sarco-lactic acid generated in rigor or activity is independent of the absorption of oxygen, since muscles are able to contract and to enter into rigor in a vacuum or an atmosphere of some indifferent gas; therefore, these processes are processes not of oxidation, but of decomposition, in which stronger affinities are saturated or satisfied and energy in consequence liberated.

We do not believe that the author has, by any means, made out a clear case; on the other hand, the researches of Paul Bert seem to conclusively prove that the absorption of oxygen and giving out of carbonic acid are true phenomena of respiration, of life, possessed, though in a less degree, by different organic tissue.

The common verdict of the profession, that, so long as these gaseous interchanges go on, life continues, and when they cease, life ends, is undoubtedly correct.

Prof. Hermann advances the following ingenious theory to explain the chemical processes occurring during contraction and rigor:—

"Muscle contains at any moment a store of a complicated nitrogenous substance dissolved in the contents of the muscle-tubes and in the muscle plasma, which may be described for the sake of brevity as the 'energy-generating,' or 'inogene substance.' This 'inogene substance' is capable of undergoing a decomposition in which energy is evolved and the following products yielded, viz.: carbonic acid, sarco-lactic acid, probably glycerine-phosphoric acid, and a gelatinous body, myosin, of an albuminous nature, which separates spontaneously and afterwards contracts firmly, becoming probably concentrated. This decomposition occurs spontaneously but slowly while the muscle is at rest, the rapidity of its occurrence being determined by the height of the temperature. It takes place instantaneously at the temperature of heat-rigor. It is, moreover, at once accelerated by stimulation; and this acceleration is essentially what occurs during the active condition. When the substance is entirely used up, muscular activity is no longer possible."

The recovery of an exhausted muscle, apart from the mere removal of the effete materials, is supposed to consist in a synthesis of this 'inogene substance,' in which myosin plays an important part, and for which the blood supplies some non-nitrogenous organic body hitherto undiscovered. Myosin is thus supposed to undergo in muscle a complete cycle of chemical changes.

However, this inogene or energy yielding substance, whose composition is supposed to resemble hæmoglobin, has so far successfully resisted all the efforts of chemistry to isolate it.

Prof. Hermann places the fullest confidence in his theory to answer the many rugged problems connected with the chemistry of muscle; the profession will probably be inclined to withhold its approval at least for the present.

The changes in form and the work performed by the contracting muscle are well described. He, however, emphasizes more strongly than any author with whom we are familiar, the diminution in volume which a contracting muscle undergoes, terming it, a "species of condensation." We believe the usual teaching on this point is practically correct. Lately Valentine, by a very minute process, has claimed to have shown that a muscle in passing into the contracted form increases in density in the ratio of $\frac{1}{1366}$ th, a fraction too small to be worthy of notice. The familiar experiment upon which the author relies to substantiate his statement has never, in our hands, shown the positive result given in the text.

In view of the unsatisfactory nature of the theories usually adduced to explain the phenomena of muscular activity, we read with pleasure the following theories proposed by the author.

"The analogy, which is now complete, between the phenomena of activity and rigor warrants the proposition of a new theory of muscular contraction, which differs from the views previously held. The points of analogy between rigor and the active state are the following: 1. The chemical process so far as is known is the same in both conditions. 2. In both acts the muscle shortens and thickens, its volume diminishing and its electrical phenomena becoming less marked. 3. In both acts heat is generated. 4. In both acts the contents of the muscle-tubes comport themselves electrically negatively towards unaltered (living and resting) muscle. In muscle which is entering into rigor, contraction of length is attributed to the coagulation of myosin, since it is well known that every albuminous tissue, *e.g.*, a tendon, contracts strongly in the direction of its fibrillation on coagulation such as occurs on the application of heat. As now the supposition that contraction in a living muscle is accompanied by a sudden and transitory coagulation is not contrary to any of the known facts, we may assume such a coagulation to take place on the grounds of the analogy between rigor and contraction. Moreover, the following circumstances seem to favor such an assumption.

"There are no grounds for supposing that any conversion takes place in muscle, of heat into motion (as in a steam-engine), or of electricity into motion (as in an electro-magnetic machine).

"There remains, therefore, only one possibility, viz., that of a direct origin of motion from the chemical decompositions which occur in muscular tissue. We can only imagine such a process to take the form of the production in consequence of chemical change of a new body, which endeavors, like the gases evolved on the ignition of gunpowder, to fill by elasticity a definite volume. That such is the case in muscle is already affirmed by Weber's theory, and we may very well suppose the new body to be due to a sudden coagulation of albuminous substance, the explanation of details being as easy in this case as in that of contraction of tendon on boiling. The heat and electricity generated in muscle, from the quantities in which they occur, are at all events by-products.

It is not yet decided whether they are dependent upon the processes of chemical decomposition, or upon physical changes of aggregation."

Part III., which constitutes more than one-third of the work, describes the nervous system, under the name of the "Liberating Apparatus"—"Die Auslösende Kraft."

The influence of the nervous system is held to be of a liberating nature, that is, a force which leads to the conversion of a certain amount of potential into kinetic energy. Prof. Hermann has presented here a generally good *résumé* of the salient points in the physiology of this intricate department; however, in some divisions of his subject, the discussion is eminently unsatisfactory.

The discussion of nerve fibres and nerve cells is separated by the interpolation of the special senses; and, indeed, until he has read over one hundred pages, the student is scarcely aware of the existence of nerve-cells. This arises from the method in which the author groups the organs of the nervous system into apparatus for conduction, central organs, sense organs, and end organs situated in the organs of work. The two latter groups may be regarded, and are so regarded in the body of the work, as peripheral end organs of the conducting apparatus.

The minute anatomy of the nervous system is very briefly touched upon. The three conditions under which nerves exist, rest, death, and activity, are pointed out, and the discussion of the latter condition is entered into at length.

The conditions which increase, diminish, or destroy the irritability of nerves are exceptionally well presented, as are also the various stimuli which call forth this irritability.

Prof. Hermann brings forth a theory of his own, in opposition to the commonly received theory of du Bois-Reymond, to explain the natural electrical currents of nerves. According to his view the nerve-current, like the muscle-current, is the result of contact:—

"The contents of nerve-tubes which are dying or in activity are negative to the contents of nerve-tubes which are living and at rest. The cause of the electrotonic phenomena is the polarization at the boundary between nerve-sheath and contents, to which reference has already been made. . . . If conduction in a nerve is nothing but the transmission of the condition of activity from one portion to another, then both the above theories of the nerve-current must require that, while a nerve is conducting, the point of it at which the active condition for the moment obtains must be negative towards every other point in the long axis of the nerve. No direct indication of such a condition has as yet been given."

The physiology of the cranial nerves is dismissed in the brief space of six pages, about one-half of which is devoted to the pneumogastric and the spinal accessory, which together are considered to make a mixed nerve. The whole reads more like a schedule to jog the lecturer's memory, than a guide for the student to this important and highly practical part of physiology. We are here told that the vagus contains, at its origin, motor fibres which proceed to the larynx, pharynx, and œsophagus. From the fact that Van Kempen's name appears in brackets annexed to the above, we infer that our author accepts his experiments on the origin of the vagus as conclusive. Van Kempen's experiments were published in the *Journal de la Physiologie*, Paris, 1863, and are open to serious objections. The weight of evidence is, we think, with Longet, in favor of the sensory character of the roots of the pneumogastric.

We find here once more repeated the injustice of attributing the discovery of the function of the spinal nerve roots to Charles Bell. The able review of this whole subject published by Prof. Flint, Jr., in 1868, should forever expunge this inaccuracy from physiological literature, and place the merit of this cardinal discovery where it rightfully belongs.

Chapter X. treats of the Peripheral End-organs of Nerves, and as the physiology of the conducting arrangements cannot be separated from that of the end organs, we have here introduced the whole subject of "The Special Senses." This chapter is unusually full and thorough, especially the section on the sense of sight, which occupies about eighty pages. However, the discussion is too largely encumbered with mechanical optics to be of great interest to the general practitioner.

The next chapter—the eleventh—discusses "The Central End-organs of Nerves." The characteristics of a central nervous organ are stated to be:—

"1. The liberation of the active condition in a ('centrifugal') nerve fibre, without the apparent participation of any external influence—*automatism*.

"2. The liberation of the active condition in one ('centrifugal') nerve fibre brought about through another ('centripetal') nerve fibre—*reflex action*.

"3. The phenomena collectively called *states of consciousness or mental operations*, which are connected with the irritation of certain central organs."

All organs of the body showing these characteristics contain ganglion cells as necessary constituents, which, from their direct communication with nerve fibres, must be regarded as the central end organs of nerve fibres. "It is, nevertheless, still doubtful," writes the author, "whether all ganglion cells ought to be considered as central organs, and whether there do not exist other central organs in addition to ganglion cells." We turn with considerable interest to the section on "the Properties of Ganglion Cells" to see what views so advanced a thinker as Prof. Hermann entertains on this intricate subject. After calling attention to the difficulty of the problem, he writes:—

"It is in the highest degree probable that processes of oxidation take place in ganglion cells as in all other organs. It is, however, still but a probability, unless we consider it evidenced by the fact that the venous blood of the brain and spinal cord is as poor in oxygen and as rich in carbonic acid (*i. e.*, as dark in colour), as the venous blood of any other region of the body. We are equally ignorant as to whether such processes of oxidation are concerned in the activity of the ganglion cells, and, if so, to what extent. We cannot say whether that activity is not dependent upon processes of decomposition, similar to those which occur in muscles and nerves, or what the results of such oxidations or decompositions are. Still less is known of the transformation of energy in ganglion cells. As far as can be judged, the energies which become kinetic or free in ganglion cells, are not of a nature which admits of investigation by the means at our disposal. We must suppose, in general, that molecular processes occur in them similar to, and immediately connected with, those which are assumed to occur in nerve fibres. If the active condition of a nerve fibre be imagined as a chain of successive liberations of force, the manifestation of energy in the ganglion cells must be regarded as the initial or final link of that chain; and the question now arises, what, in the first place, is the force which liberates the potential energy of the ganglion cell, and what, in the second, becomes of the force thus set free? The answer to these questions seems to be simplest in the case where the cell is intermediate between two nerve fibres, *i. e.*, in the case of *reflex* activities in the widest sense of the term. . . . In this case, therefore, we have but a single chain of liberations, the initial link of which (the original liberating force) is some influence on the external medium, which operates upon a peripheral end organ (organ of sense), and

the final link of which is the liberation of the potential energy of some organ of work, such as a muscle, gland, etc. The ganglion cells, in such a case, perform a function which differs in no essential respect from that of any portion of a simple conducting fibre. But the process which takes place during stimulations which are characterized as *automatic*, is far more difficult to understand. Under the title of automatic are included all those stimulations proceeding from a ganglion cell, in which the liberating force in the ganglion cell is unknown. In this case, two possible theories present themselves. Either the liberation of energy within the cells takes place without the aid of any liberating force, or the *automatism* is only apparent, the liberation being due to some operation of a reflex nature. Possibly many apparently automatic stimulations are to be explained on the latter supposition, as, indeed, has already been the case with some, viz., with the liberation of the respiratory movements, with muscular tonus."

The physiology of the central nervous organs is next given, a subject which the author designates as the "darkest region of physiology."

The spinal cord is introduced by a brief and necessarily imperfect description of its physiological anatomy. The reflex action of the cord is especially well described, better than is usually found in regular treatises on physiology.

Some space is devoted to pointing out the motor and sensory paths of conduction in the cord, but the effort is not distinguished for clearness.

Prof. Hermann holds the view that, probably, the spinal cord does not contain a single automatic centre, and arranges under the head of "orderly reflex actions," all those phenomena heretofore supposed to be dependent upon such centres, such as the maintenance of the tonus of muscles, the tonus of sphincters, etc. The succeeding forty-seven pages, constituting Part IV., closes the volume with a presentation of "The Origin, Development, and Death of the Organism."

The physiological career of the organism, from its inception to its death, is here hastily sketched.

This division of the book is well handled, but want of space prevents our giving an analysis of the subject-matter. In closing our lengthy but imperfect review of Prof. Hermann's Physiology, we may say, that, while we have had occasion to dissent from some of his teachings, in many respects we look upon it as the most marked of the late physiological publications, and well meriting the careful consideration of the profession.

The immense number of facts grouped under each section, with the abundant references to authorities, betoken great familiarity with the literature of the specialty, and commendable care in the collation of material.

The many original views set forth, the original manner of presenting accepted doctrines, the concise style, and the familiarity with detailed work, which the author constantly assumes, removes this work from the elementary to the advanced works on physiology. It is a book not alone to be read, but to be *studied*. We cannot speak in too high praise of the creditable manner in which Dr. Gamgee has performed his self-imposed task. The translation of the peculiar terse style of Prof. Hermann is by no means an easy matter; however, Dr. Gamgee has succeeded in rendering the work in classical English, free from that stiffness so often seen in translations. We think, in the present transition state of weights and measures, it would have been better had the translator appended a table of the metrical system, which is here used. The typography of the work is rarely excelled. The clear, large type, excellent paper, and accurate proof-reading, make a mechanical setting worthy of the book.

W. J. C.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*Saint Bartholomew's Hospital Reports*. Edited by JAMES ANDREW, M.D., and THOMAS SMITH, F.R.C.S. Vol. XI. 8vo. pp. xxxvi, 304. London: Smith, Elder, & Co., 1875.

THE opening paper in the present volume of this valuable series is a graceful tribute by Sir THOMAS WATSON, to the memory of the late *Dr. Peter Mere Latham*, a physician who is perhaps best known to us in this country by his work on diseases of the heart; but who would probably have left behind him even greater evidences of his industry and talents if he had not been compelled, by continued ill health, to resign his office of physician to St. Bartholomew's at an age when the powers of his mind were ripest. He appears to have been, moreover, a high-minded and honourable gentleman, one who won the affectionate regard of all those with whom he was brought in intimate contact.

As usual, we shall notice the medical and surgical papers separately.

The first of the medical papers is by Dr. ROBERT GREENHALGH, and entitled *The Causes, Diagnosis, and Treatment of Missed Labour*. This term has been applied to a class of cases of uterine pregnancy, in which, through failure of the parturient action, the fœtus is retained for an indefinite period beyond the term of normal gestation. In most if not in all the cases the fœtus has apparently been dead at the time when labour should have taken place; and the waters of the ovum have generally been discharged about this time or previously. Cases of obstructed labour due to mechanical impediment in the cervix uteri, of extra-uterine pregnancy, and of protracted gestation, have frequently been grouped with these; nor is it at all times an easy matter to distinguish them, such skilful accoucheurs as Montgomery and McClintock having each failed to recognize the true condition in a case of missed labour which came under his notice. Dr. Greenhalgh's explanation of the retention of the fœtus beyond the period of gestation is briefly as follows: The fœtus dying, there is at once an arrest of the development of the uterus which enables it in due time to take on parturient action.

In regard to the treatment of these cases, the author says, that, where a natural attempt at labour has occurred only a short time before the case is brought to his notice, he should be disposed to try to induce a recurrence of the uterine action in the usual way by dilating the cervix, using galvanism, ergot, etc. If, however, a long period has elapsed and there are no symptoms of irritation, he would leave the patient alone. In one case no ill results followed the retention of the fœtus for fifty-two years. Whenever constitutional or local irritation is set up, he thinks with McClintock "that this mass of fœtal corruption should when practical be exhumed from its living sepulchre." He recommends also that the uterine contents should be removed by degrees rather than by one long-continued operation, whereby the probabilities of inflammation will be lessened and the uterus will have time to contract. He believes that Cæsarean section can rarely be a justifiable operation in these cases.

In addition to the very full notes of Dr. Greenhalgh's own case, the paper contains the notes of nine additional cases, all of which are tabulated.

The Induction of Premature Labour is the title of a well-written paper which was read before the Abernethian Society of St. Bartholomew's Hospital, by Dr. CLEMENT GODSON. Of all the various plans for inducing premature labour, the author prefers the dilatation of the os uteri by means of sponge tents.

Dr. SAMUEL GEE contributes two short papers to the volume. In the first he reports a case of *Tuberculous Angina Faucium*; a disease which he contends is almost wholly overlooked by nosologists, and in which the angina is a part of a general tuberculosis. It does not seem, however, to present any well-marked characters by which it can, if there are no other symptoms of the diathesis, be recognized during life, for in the case which forms the nucleus of this communication Dr. Gee does not seem to have been certain of his diagnosis, until after he had discovered mesenteric disease. When speaking of the appearances presented by the throat, he says, "The ulceration of the soft palate progressed slowly until at length the uvula disappeared. But the condition was clearly very different from the quick melting down of the palate which occurs in the syphilitico-scurfulous or lupiform angina with which everybody is well acquainted. Slowness was very characteristic of the ulceration in this boy's case."

The second of Dr. GEE's papers is on *Laryngismus*, a disease which he asserts is more prevalent during the former half of the year than during the latter. Thus from the beginning of January, 1866, to the end of December, 1868, he saw sixty-three cases of laryngismus, fifty-eight of which occurred in the months of January, February, March, April, May, and June. He is inclined to attribute this preponderance of cases in these months to the fact that, in consequence of the chilly dampness of the English winter and spring, infants are kept very much indoors, "in rooms which are warm and close, a condition which," he says, "begets and increases an erethism of the nervous system, which shows itself in turn as a spasmodic diathesis."

In a paper entitled *Clinical Contributions to Practical Medicine*, Dr. DYCE DUCKWORTH expresses the opinion that cervical venous murmurs will be found to be audible in most well-marked cases of anæmia in males. The subject, he thinks, has hitherto escaped much attention because males are less frequently than females the subjects of grave anæmia, and hence the opportunities for noting venous murmurs in them are fewer. Pain he has found to be present always in zona, but not necessarily in the simple form of herpes. He recommends as the best local treatment for zona the application of flexible collodion. He has known hæmoptysis occasionally to occur as a consequence of nutritional changes in the pulmonary capillaries and arterioles in cases of emphysema where phthisis did not at the same time exist.

In some cases of rheumatic fever, Dr. Duckworth says, it matters not how they are treated, a certain stage is reached in which no measure appears so useful as the addition of a little brandy to the diet. In his experience no remedy has been so efficient in checking night sweats as oxide of zinc in doses of from two to four grains. He sees no reason for believing that beef-tea increases or aggravates any tendency to diarrhœa either in typhoid fever or chronic dysentery, and is sure that in these diseases diarrhœa is more likely to be kept up by the use of starchy food. That the patient may not suffer from the want of vegetable juices, it is well to adopt Sir William Jenner's suggestion of boiling some vegetables in a bag in the beef-tea.

There are many cases of interest in Dr. WICKHAM LEGG's *Report from the Post-mortem Room*.

In the course of an article on *Uncontrollable Impulse*, Dr. T. CLAYE SHAW says that no question is more important at the present day among the many problems of insanity than that having regard to impulse. "The fact that legal edicts do not acknowledge it, that in its application it has been abused, or at least overstrained, that it is an excuse so readily brought forward, that the very conditions of its existence are so obscure that, in attempting to reduce it to rules, science is at fault, all show that the subject deserves and requires the greatest latitude that actual experience can give it."

Mr. NORMAN MOORE contributes *An Essay on the History of Medicine in Ireland*, which is founded on an examination of some MSS. in the British Museum, and in which the author shows a good deal of research. Its nature does not admit of its being analyzed, and we must, therefore content ourselves with this brief reference to it.

One of the most important of the papers in the volume is contributed by Dr. LAUDER BRUNTON. Its subject is *Irritants and Counter-irritants*, especially with reference to their application in the treatment of rheumatism. We shall give his conclusions in his own words.

1. Dilatation of bloodvessels, and a rapid circulation through them, is advantageous for the tissues, and leads to increased growth and more rapid repair, while this arterial or active congestion is beneficial, venous or passive congestion is injurious. 2. The application of an irritant induces dilatation of the vessels, and a free current of blood through them; this will help to repair any injury done to the tissues by the irritant, so that the injury, to a certain extent, brings its own remedy. 3. Arterial congestion and inflammation are entirely different from and independent of each other, although they generally occur together. 4. Arterial congestion passes into inflammation when stasis begins to occur in the capillaries. 5. Stasis is not improbably due, as supposed by the brothers Weber, to coagulation of blood in the capillaries, the coagulation being induced by changes in the tissues composing the walls of the vessels, or immediately surrounding them. 6. Pain in an inflamed part is probably due to distension of vessels and pressure on nerves by the blood being pumped with violence through the dilated arteries against the obstruction in the capillaries. 7. Pain may be relieved by lessening tension in various ways; by position, by cold, by warmth, by blood-letting, by counter-irritants. 8. Cold probably relieves tension by contraction of the arteries going to the inflamed part, warmth by dilating the capillaries of the surrounding parts, and thus drawing away the blood from the seat of inflammation. 9. At the same time that an irritant causes dilatation of the vessels in the part to which it is applied, it causes contraction of the vessels in other parts of the body. 10. It is probable that it does not cause contraction in all parts alike, but that definite areas of the skin correspond to definite sets of internal vessels. 11. The relief of pain produced by a blister in pleurisy, pneumonia, or rheumatic inflammation of a joint, is probably due to reflex contraction of the arteries in these parts. 12. Blisters are useful in lessening congestion in pericarditis, and in relieving the pain of inflamed joints in rheumatism. 13. The benefit derived from their use in young persons, especially those suffering from a first attack, is very great. In elderly persons it is inconsiderable. 14. The beneficial action of a blister in callous ulcer is probably due to the increased supply of blood to the part, induced by its application.

In some *Notes from the Gold Coast*, Mr. THOMAS JONES gives the results of his experience in regard to the connection between dysentery and hepatic abscess, which is decidedly opposed to the theory advanced by Dr. Budd, that the former is a frequent cause of the latter. "So far," he says, "from dysentery on the Gold Coast being a frequent cause of abscess of the liver, out of about two hundred and sixty-three cases of the former disease seen by me, in not a single case was abscess of the liver present." He admits, however, that the

latter disease is not unknown in Africa, although of less frequent occurrence than in India or China. On the other hand, cirrhosis is not uncommon among the native population of the Gold Coast, as the result of the excessive use of alcohol. In the treatment of dysentery Mr. Jones recommends the administration of large doses of ipecacuanha in powder. He regards it as almost a specific.

In the remarks which follow the description of *Two Examples of Malformation of the Heart*, Mr. NORMAN MOORE expresses the opinion that by strict regimen, a patient with malformed heart may often be kept alive longer than statistics would lead one to expect. The patient, he adds, will never be fit for hard physical exertion, but may have health enough to be useful in life.

Of the *Three Cases of Disease of the Lungs*, reported by Dr. F. DE HAVILAND HALL, the first is a case of empyema, complicated with phthisis and emphysema. After thoracentesis had failed to give permanent relief, Dr. Hall introduced a drainage tube, which was allowed to remain in the chest just four weeks, at the end of which time all discharge had ceased; the patient made a good recovery. Some excellent remarks as to the treatment of empyema follow the report of this case. The second case is one of hæmoptysis, in which the author thinks the condition giving rise to the hemorrhage was dilatation of a bronchus, and not phthisis; an opinion, which rested principally upon the fact that the patient expectorated a large amount of fetid pus, and that there was no hectic and no great emaciation. The patient was seen three years later by Dr. Hall, who could discover at that time hardly any signs of the old lung mischief. During the hemorrhages, which were profuse, Dr. Gee was induced to try the effect of Trousseau's plan of giving ipecacuanha in ten-grain doses every ten minutes for three doses, vomiting being no counter-indication. It does not seem that the effect of this was particularly happy.

In the third case, a little boy, three years of age, had several convulsions which were found, upon examination, not to depend upon cerebral disease, but upon pneumonia of the apex. Dr. Hall calls attention to the importance of examining the chest in all cases of convulsions in children.

The *Case of Erythema Nodosum*, which forms the subject of a communication from Dr. PHILIP HENSLEY, is chiefly remarkable from the fact that the patient was an adult male (34 years), it being well known that the disease is more common in young women.

Mr. GEORGE HASTINGS reports a case of *Idiopathic Tetanus*, which occurred in a man aged 20, and which appears to have been the result of a thorough wetting. The patient, who was under the care of Dr. Southey, was ordered two drachms of the succus conii with twenty grains of the bromide of potassium every three hours. The disease, although somewhat tedious, ended in recovery in about six weeks.

Among the *Medical Cases* reported by Mr. VINCENT HARRIS, is one of *Secondary Syphilis*, in which the eruption was ushered in by paroxysms of high temperature, and symptoms resembling those of an ague fit. This was followed by similar paroxysms accompanying or preceding each increase of the syphilitic manifestations. A temperature chart accompanies the history of this case. The other cases were as follows: 1. Two cases of diabetes mellitus. 2. Malignant tumour of thyroid gland, involving glands of the neck. Cancer of the œsophagus, causing obstruction. 3. Osteo-arthritis with osteoid cancer affecting the sternum, ribs, right clavicle, glands of neck, and mediastinum and the liver, and causing fracture of sternum and right clavicle.

The volume also contains the *Proceedings of the Abernethian Society*—a

society which is composed of the officers and students of the Hospital. It will be found to contain abstracts of several interesting papers. J. H. H.

The first paper of special interest to surgeons is contributed by Mr. WILLIAM HARRISON CRIPPS, and is devoted to a consideration of *The Treatment of Hemorrhage from the Posterior-Tibial Artery in the Upper Two-thirds of its Course*. This paper, which may be regarded as a continuation of one published by the author in the preceding volume of the Reports, and noticed in the number of this Journal for October, 1875, page 482, is based upon an analysis of twenty-one cases, which Mr. Cripps has collected from various sources, and which he briefly reproduces in an appendix, though in several of them he unfortunately neglects to give the ultimate result. This oversight renders it somewhat difficult for the reader to test for himself the justice of the author's deductions, but we feel bound to say that Mr. Cripps's cases do not seem to us to prove the propositions which he seeks to establish. Thus his first case, which is one of those upon which he relies to show the disadvantages of Guthrie's plan of tying the bleeding vessel in the wound, might, with at least equal propriety, be quoted in opposition to Mr. Cripps's favourite mode of treatment by pressure and bandaging, for the latter plan was tried (no doubt clumsily, but still tried) for no less than eight days, thus rendering the case a very unfavourable one for any subsequent operation. Again, Case VII., in which death followed ligation of the vessel in the wound, was one of hemorrhage following the removal of a foreign body, which was reported by Mr. Callender in the last volume of the Reports (see No. of this Journal for October, 1875, p. 484), and which we do not hesitate to say might probably have terminated differently had the operator availed himself of the advantages to be derived from the use of Esmarch's bandage. Finally, Case VIII. seems to us very unfairly adduced as an illustration of Guthrie's method, for, the *posterior* tibial artery being wounded, ligatures were applied first to the *anterior* tibial, and then to the *popliteal*, when, as might have been expected, gangrene ensued, and the limb had to be amputated.

In his cases of ligation of the femoral artery for injury of the posterior tibial, Mr. Cripps makes no distinction between cases of *hemorrhage from open wound* of the artery, and those of *subcutaneous laceration* of the vessel as a complication of simple fracture. In the latter set of cases, deligation of the femoral artery is no doubt the proper mode of treatment, but in the former the surgeon's choice should, it seems to us, rest between ligation in the wound and amputation. We think it but right to say here, that Mr. Cripps has (unintentionally of course) misrepresented Prof. Erichsen's views upon this subject, in his references to that author's writings on pages 95 and 98. Prof. Erichsen recommends immediate amputation in cases of *compound* fracture of the leg in its upper third, attended with wound of one of the tibial arteries, and in cases of simple fracture attended with rupture of the *popliteal*; but he distinctly advises ligation of the femoral in cases of simple fracture complicated by diffused traumatic aneurism, in which the symptoms show that the injured vessel is the posterior tibial.

Mr. Cripps's Case XVIII. illustrates nothing but bad practice; it was one of simple fracture accompanied with rupture of the posterior tibial, and, had either ligation of the femoral, or amputation, been promptly resorted to, a fair chance would have been given for recovery. But nothing was done for nine days, when, the limb being already gangrenous and the patient, of course, in the worst possible condition, amputation was practised, and death followed an hour later. We shall not dwell upon Mr. Cripps's cases of successful employment

of bandaging and pressure, further than to say that one (Case XX.) was a case of *primary* hemorrhage from a simple incised wound, in which as all bleeding was definitively controlled by pressure, obviously no other treatment was necessary, and that the other (Case XXI.), as quoted, furnishes no positive evidence that the posterior tibial was really wounded, but, on the contrary, the strongest probability that the hemorrhage came from a smaller branch enlarged by inflammatory action.

We have given a good deal of space to Mr. Cripps's paper because we consider it an able one, and all the more dangerous because of its ability. Every few years some fresh writer arises, who undertakes on the strength of a few new facts, or of a hasty generalization from old ones, to overturn the rules for the treatment of hemorrhage which have been painfully established by the experience of generations; and though of course he does not eventually succeed, he manages to unsettle the minds of youthful operators, and the value of the old rules has to be again and again demonstrated at the cost of human suffering.

Some Cases of Congenital Dislocation of the Hip-Joint, with Remarks, form the subject of the next paper which demands our attention, and which is furnished by Mr. HOWARD MARSH. Fourteen cases are narrated by the author, five being typical examples of double congenital dislocation, as described by systematic writers, while the other nine were cases of unilateral luxation, five of the right side and four of the left. Most of these had been mistaken for cases of hip disease or of infantile paralysis, an error which Mr. Marsh believes may always be avoided by making a careful examination.

"Diagnosis," he says "must rest on evidence, part of which is positive, and part negative, the latter being quite as important as the former. The positive evidence consists in (a) lameness, which is usually very marked; (b) shortening of the limb, which is also smaller and weaker than that of the opposite side; (c) lordosis; it may be observed that the degree in which this is present depends upon the position of the end of the femur; if the dislocation is upwards and backwards, lordosis will be well marked: while if it is in a direction upwards towards the anterior superior iliac spine, lordosis will be very slight, for the inclination of the pelvis is not altered to any material extent; (d) an abnormal conformation of the upper end of the femur, the head and neck being small and ill-shapen, or wholly absent; and its abnormal relation to the side of the pelvis, whether it be movable on the dorsum ilii, or held in a false joint more or less removed from the natural position of the acetabulum; (e) some defect in the ball-and-socket movements natural to the hip-joint, particularly in abduction and rotation outwards. The negative evidence is that there has been at no time any symptom of morbus coxarius, or of any accident by which dislocation could have been produced. It is usually easy to exclude infantile paralysis; for the limb, though undersized, is under perfect voluntary control, the child can move it freely in all directions, and its temperature is natural. Besides this, in the one case the joint is well formed, while in the other it is plainly abnormal."

Mr. Marsh's views as to the causes and treatment of congenital hip dislocation, are reserved for a future communication.

The next paper is on *The Treatment of Stone in the Bladder of Female Children*, and is contributed by Mr. W. J. WALSHAM. This paper is founded upon a study of sixty-three cases collected by the author, which are appended in tables, and classified according to the mode of treatment employed in each instance. Mr. Walsham's conclusions, which seem to be sustained by the evidence adduced, are as follows:—

"1. That for small stones, both rapid and slow dilatation of the urethra, in children as in adults, are good operations.

"2. That of these two, rapid dilatation under chloroform is perhaps the better, as causing less annoyance and inconvenience to the patient.

"3. That moderate and even large-sized stones have been removed by dilatation; but that, as incontinence has frequently followed from over-distension, it is not justifiable to subject the patient to this risk.

"4. That, after limited dilatation, should the stone appear larger than was anticipated, it may be crushed with safety; but should crushing be considered unadvisable or impossible, it is better to perform vaginal lithotomy than subject the patient to any risk of incontinence by over-dilatation.

"5. That it is not safe to aid the dilatation by incising the urethral walls.

"6. That incision of the urethra alone, without dilatation, in whatever direction practised, is frequently attended by incontinence, and should therefore be abandoned.

"7. That moderate and even large stones can be safely removed from young children by vaginal lithotomy, aided, if necessary, by dilatation of the vagina, incision of the fourchette, and crushing of the stone through the wound made in the septum, without any risk of a permanent vesico-vaginal fistula, so long as the edges of the incision are not bruised in the extraction.

"8. That the incision in the septum should be very free, but not involve the walls of the urethra; and, should that first made be found too small, it should be enlarged before any attempts at extraction are undertaken.

"9. That, should a fistula remain after this operation, even when carefully performed, it can be readily closed.

"10. That, after the incision has been prolonged to the limits of safety, the stone still appearing too large for easy removal, and crushing being considered unadvisable or impracticable, it is better to open the bladder above the pubes than, by lacerating the sides of the wound by forcible extraction, to subject the patient to the possible danger of a permanent vesico-vaginal fistula.

"11. That the lateral operation, as practised by Dr. Buchanan, of Glasgow, appears well adapted for children suffering from a small stone, or, perhaps, one of moderate size; and that, as it has been successfully practised in India and Glasgow, it is deserving of trial in this country.

"12. That *very* large stones can only be removed by hypogastric or vaginal lithotomy; and that, as the latter proceeding would in this case be probably followed by a permanent vesico-vaginal fistula, it is better to choose the more dangerous operation than subject the patient to this loathsome affection.

"13. That the supra-pubic operation, when carefully performed, is possibly much safer than is generally supposed; but that, as it may be followed by death, it should only be undertaken when all other alternatives threaten permanent incontinence."

Mr. HENRY POWER contributes *Selected Cases of Injury of the Eyes*. These cases, thirty-nine in number, are all of some interest, but do not call for special comment. Many of them serve to illustrate the propriety of early enucleation in cases of suspected lodgment of a foreign body in the vitreous.

A short but very valuable *Report on the Treatment of Ruptured Perineum* is from the pen of Mr. THOMAS SMITH. Mr. Smith, like most British operators, employs a double set of sutures, one deep and the other superficial. The deep sutures, which he prefers to be made of soft, thick, silver wire, are passed through perforated shields of sheet lead, one on either side of the perineum, the wires on one side being simply twisted together, and on the other secured by clamped shot. Before fastening the sutures, Mr. Smith makes "lateral incisions, two inches or more in length, parallel to the line of the wound, and made deep into the fat of the buttock;" regarding these lateral incisions as much more effective than the sections of the sphincter ani recommended by Mr. Baker Brown. Mr. Smith makes no effort to prevent the action of the patient's bowels after the operation, but, on the contrary, directs that she should be cautioned under no circumstances to attempt to exercise any control over the sphincter, but to allow the passive escape of both feces and flatus

whenever any inclination to do so is felt; he, moreover, prescribes a simple aperient (unless the bowels have been spontaneously moved) just before removing the deep sutures, which he does not allow to remain, on an average, longer than one week.

A Case of Femoral Aneurism Cured by Digital Pressure is reported by Mr. W. MORRANT BAKER, as a contribution to the statistics of this mode of treatment, but presents no features of sufficient peculiarity to require special remark.

We turn therefore to *Notes of Three Cases of Air in the Cavity of the Pleura as the Result of Injury*; by HENRY TRENTHAM BUTLIN. These cases are all of much interest; in the first and second, the patients recovered, and the diagnosis therefore lacked post-mortem confirmation; but the symptoms and histories rendered it almost certain that rupture of the lung had occurred in both without injury of the thoracic parietes. In the third, the symptoms of pneumothorax were found after death to be due to the passage of the stomach, enormously distended with gas, through a laceration in the diaphragm, or, in other words, to the existence of a large diaphragmatic hernia. In commenting upon his first two cases, Mr. Butlin refers to a similar observation published by Sée, and mentions that he has himself made an autopsy in a case of pulmonary laceration without fracture—a case which we presume to be that recorded at page 45 of the Appendix to this volume of Reports. In the *Transactions of the Philadelphia Pathological Society* for 1871 (vol. iv. p. 133), the present writer tabulated sixteen cases of rupture of the lung without injury of the thoracic wall; adding to these, cases since recorded by R. Nelson, Da Costa, W. Adams, and Hilton, and the four mentioned by Mr. Butlin, we have a total of twenty-four examples of this rare form of injury occurring in civil life—seven having terminated favourably and seventeen in death. In military practice, the affection appears to be less fatal—twenty-five cases referred to by Dr. Otis as having occurred during our late war (*Medical and Surgical History of the Rebellion*, First Surgical Volume, page 477) furnishing no less than eleven recoveries.

The *Hospital Statistics*, which terminate the volume, are supplied by the Medical Registrar, Dr. W. AINSLIE HOLLIS, and the Surgical Registrars, Messrs. HENRY T. BUTLIN and EDWARD MILNOR. They contain as usual a great deal of valuable material in a form convenient for study. On pages 11 and 82, we find references to three fatal cases of “lithonephrotomy.”

J. A., JR.

ART. XXIII.—*Transactions of the Obstetrical Society of London*. Vol. XVII. For the year 1875. Text, pp. 400. London: Longmans, Green & Co., 1876.

THIS volume is an unusually large one, as it contains a list of the Fellows, filling 51 pages, and a catalogue of the library, occupying 140. The ordinary Fellows number 637.

Case of Hydatiform Mole. By JOHN WILLIAMS, M.D.—This occurred in a woman of 30, and is chiefly remarkable in the fact that the ovum was expelled almost entire, the bag being ruptured, but preserving the shape of the uterus, and showing the manner of attachment of the vesicles within. “The bag was evidently formed by the decidua, and was about a quarter of an inch in thickness. At one part it was thick and fleshy, though on section it presented many

cysts. The thickened portion was doubtless the imperfectly formed placenta." . . . The vesicles "were arranged like beads on a string, which was attached to the inner surface of the decidua."

Complication in the Delivery of an Ascitic Fœtus. By J. ASHBURTON THOMPSON.—Case occurred under care of the Royal Maternity Charity. Mother 38—tenth confinement—feeble and emaciated from poverty and want; had been no motion of fœtus for two weeks. Moderate traction with forceps tore through the neck in delivering the head; the arms were then brought down, but traction failed to bring away the body during twenty minutes' effort. Two labour pains, reported as trifling, in the absence of the physician, delivered the fœtus. Woman died in 93 hours, presumably from pyæmia. Cause of difficulty believed to be the collection of ascitic fluid in the lower part of the abdomen during traction, widening and enlarging the resisting protuberance so as to prevent its passage. The ready removal under nature's efforts is accounted for by the uterine pressure forcing the fluid through the obstructing point and thus elongating and narrowing the abdominal protuberance, so as to favour the delivery of the flaccid fœtus.

On the Prevention of Mammary Abscesses by the Application of the Principle of Rest. By W. BATHURST WOODMAN, M.D.—By reasoning from the effects of over-distension of the mammæ in the lower animals, when deprived of their young, physicians have been led gradually to discard the use of friction, and give the glands as much absolute rest as possible. Dr. Woodman puts the patient in bed, stops nursing, applies pressure, and resorts to the internal remedies which diminish the secretion of milk. In the discussion following his paper, the application of a belladonna plaster, abstinence from all fluids, except a little melted ice, the use of tincture of aconite in minim doses every hour, and of iodide of potassium, very low diet, and pressure with the handkerchief bandage, were recommended as valuable preventives of the formation of abscess.

Treatment of Chlorosis and Anæmia with the Phosphide of Zinc.—Dr. J. ASHBURTON THOMPSON claims very marked and rapid improvement in some cases by the use of phosphide of zinc, which he gives in half-grain doses associated with some acid preparation of iron three times a day; and especially in subjects where neuralgia is a prominent symptom. Caution is to be observed in the use of this remedy, which is sometimes poisonous in the first dose.

Treatment of Rigid Perineum, and the Avoidance of its Rupture. By H. ERNEST TRESTRIAL, F.R.C.S.—The plan recommended is the forcible distension of the vulvar opening, by hooking it backward towards the coccyx with two or three fingers, until the tissues are sufficiently distended to admit of the use of the forceps, or a natural birth, without risk of rupture. This was for many years a common method with the late Dr. William Harris of this city, who claimed that in cases of feeble uterine action it frequently induced much more forcible efforts at expulsion when tried during a pain.

On the Relation of Puerperal Fever to the Infective Diseases and Pyæmia.—This paper, by Mr. T. SPENCER WELLS, F.R.C.S., occupying eleven pages in the Transactions, was introduced mainly for the purpose of provoking discussion upon six points, viz. :—

"1. Is there any form of continued fever, communicated by contagion or infection, and occurring in connection with childbirth, which is distinctly caused by a special morbid poison, and as definite in its progress and the local lesions associated with it, as typhus or typhoid, scarlet fever, measles, or scrofula?

"2. May all forms of puerperal fever be referred to attacks of some infective continued fever, as scarlet fever or measles, occurring in connection with child-

birth, on the one hand; or, on the other, to some form of surgical fever, or to erysipelas, caused by or associated with changes in the uterus and neighbouring parts following the process of childbirth?

"3. If all cases of contagious and infectious diseases which occur under other conditions than that of childbirth are set aside, does there remain any such disease as puerperal fever?

"4. Assuming that a form of continued fever communicable by inoculation, contagion, or infection, does frequently occur in connection with childbirth, how can its spread in private and in hospital practice be most certainly prevented or checked?

"5. What relation have bacteria and allied organic forms to the pyæmic process in the puerperal state?

"6. What is the value of antiseptics in the prevention and treatment of puerperal fever?"

To judge of the interest excited in the Society by the introduction of this important and complex subject, we have only to state that the discussion of Mr. Wells's paper extended through four meetings, occupying a large proportion of the time of each; that the attendance averaged nearly a hundred; that the report fills 150 pages of the "Transactions," in addition to the introductory article, or 161 in all; and that the following named parties took an active part in the discussion:—

Drs. Leishman, Newman, Braxton Hicks, Jonathan Hutchinson, Richardson, Barnes, Squire, Brunton, Jarrow Huntley, Brown, Clifton Swayne, Graily Hewitt, Arthur Farre, Savage, Wynn Williams, Playfair, Tilt, Constantine Holman, Fordyce Barker (of New York), Charles West, Greene, Routh, Wallace, Griffiths, Mr. Callender, and Mr. Spencer Wells in reply—26.

In reading carefully this long discussion, we are most struck with two things; the varied and often directly opposing opinions held by learned and close observers, and the little that we have yet learned to make our knowledge of the formidable disease in question a positive one, either as to its true nature, or the best means of prevention and cure. Men of large experience as obstetricians vary exceedingly as to their practical knowledge of puerperal fever, years in some instances having passed without the occurrence of a single case in an extensive practice; and in others scarcely a year without one or more cases. An examination of the discussion shows how differently symptoms of disease are valued, and what differences of impression are derived from an examination of corresponding circumstances leading to or existing in disease, even by the most celebrated medical observers.

There is scarcely a step in all the six points given by Mr. Wells in which entirely opposite views were not advanced; but still, from the force of argument, and the preponderance of numbers, we are able to form a judgment without much difficulty as to the prevalent views held upon many points of interest.

1. It appears to be the general opinion that there is a very intimate relation-ship between erysipelas, especially of the phlegmonous type, and puerperal peritonitis; and that the former is capable of producing the latter by infection, and vice versa, as shown repeatedly by incontestable evidence.

2. With regard to the connection between puerperal fever, on the one hand, and scarlet fever, measles, diphtheria, typhus, and smallpox on the other, there is a much greater diversity of opinion in the Society, and the profession generally. Scarlet fever does attack puerperal women without any of the symptoms peculiar to childbed fever being present. A puerperal woman may be exposed to the disease and escape, whilst her child may be seized with it shortly after birth and die. There are also cases in which puerperal fever would appear to originate in scarlet fever; and there are forms of the former occurring in isola-

ted country districts without exposure to scarlet fever, where there is a rash accompanied with some soreness of the throat. Sewer gas would also appear capable in some cases of producing diphtheria, typhus, or puerperal fever, according to the susceptible state of the party inhaling it; but it is a point difficult to separate from a coincidental condition, without a long array of facts to establish it.

3. The preponderance of opinion would appear to be in favour of the belief that puerperal fever is inoculable, infectious, and contagious: that students from the dissecting room, dressers from surgical wards, physicians treating abscesses, especially erysipelatous cases, and nurses attending puerperal peritonitis subjects, may infect parturient women.

4. A common cause of puerperal fever is believed to be the absorption of poisonous matter from the vagina, uterus, or lacerations of the perinæum; arising in decomposition of retained clots, blood, or lochial discharge; in proof of which we have the benefit often experienced from washing out the uterus and vagina with tincture of iodine and water, dilute Condry's fluid, solution of permanganate of potash, and other antiseptic preparations.

5. Whether puerperal fever is a multiform disease or has a true oneness of character like typhus, measles, or scarlet fever, is a question which appears to be of questionable solution with our present knowledge. With some it is a defined disease, a form of continued fever, having well marked characteristics, whilst with others it is a septicæmia, a pyæmia, a phlebitis, etc. Dr. Fordyce Barker held firmly to the opinion that childbed fever is a distinct essential disease, in which view he held opposite ground from many of the fellows.

6. The question of the influence of *bacteria* and *vibrios* in generating or aggravating the disease was but slightly touched, our present state of knowledge not being considered sufficient to base a positive opinion upon. The prevalent judgment was that these animalculæ are only a secondary result of disease, and not a primary cause.

As preventive means are much more to be relied upon than curative in childbed fever, it is well in both hospital and private practice to adopt every known precaution for reducing the number of cases as nearly as may be to those known as *autogenetic*. Besides the hygienic measures necessary for securing the health of the woman, obstetricians should avoid attending cases of labour while having under care puerperal fever, erysipelas, abscesses, or any of the class of diseases known as *zymotic*. Nurses should also avoid going to parturient women when they have been recently waiting upon any case of the kind mentioned. The clothes of students and dressers should be changed, after taking a Turkish bath, and their hands cleaned by an antiseptic wash. A few weeks of interval, and the same cleansing process, should be adopted by physicians and nurses after leaving finally a case of puerperal fever, before attending the next one of labour. Autopsies should not be made by obstetricians. Three physicians of this city once examined a case of erysipelas after death, and were all called in the following night to cases of labour: the three women all took childbed fever and died. Purulent discharges, whether from an abscess, a cancerous disease, or a syphilitic ozæna, may set up a mysterious influence which shall lead to puerperal fever in some parturient women, although there is in cancer and syphilis no similarity with puerperal peritonitis. They appear to act simply as pyogenic diseases, conveying infection through the influence of septic poisoning. We have known syphilitic caries of the bones of an accoucher's nose to be the fruitful source of septic infection in a large number of parturient women under his care. All forms of dead matter seem to be capable of lighting up the fire of puerperal fever, whether from the dissecting room, the

surgical ward, or private practice; and even the effluvia when inhaled would appear capable of the same power.

We are not of those who would denominate childbed fever by a pleural title, or call it pyæmia, septicæmia, or purulent phlebitis, according to the peculiar phenomena of the case, as shown in the origin of attack, progress of the disease, or by examination after death. We hold with Dr. Barker that there is such a disease as *puerperal fever*, marked in its origin and character as a distinct and essential malady; having no greater variety in its types than is to be found in erysipelas, which closely resembles it when it prevails in the form which has been denominated *malignant internal erisipelas*; and determined in its special type by the manner of introduction, grade of poisoning, and physical state of the subject. When we regard the physical condition of a woman after parturition, the amount of blood lost, the character of the utero-placental laceration, the frequent abrasions or tears of tissues, and the great tendency that exists in the female uterus to become inflamed under very slight surgical provocation, the wonder is that inflammatory post-partum fever originating in mischief set up in the tissues of this organ is so comparatively rare.

Intra-Mural Calcareous Tumour Impeding Labor. By Dr. A. WYNN WILLIAMS.—Patient 45, primipara; bony mass appeared to be of pelvic origin when first detected, covered with mucous membrane, and firmly attached at the left sacro-iliac symphysis, and stretching across the pelvis, so as to force the os uteri to the opposite side of the cavity. The child's head was perforated, and an attempt made to deliver by craniotomy, in the ordinary way, but failed. Cephalotripsy was then resorted to, but in the mean time, labour had so advanced, and changed the relationship of parts, that the bony tumour was discovered to be intra-uterine, and to present before the head. The mass was seized and partly broken by the cephalotribe, the head was then brought down, and the fœtus delivered, after which, the removal of the placenta being interfered with, the operator introduced his hand into the uterus, and removed the larger remnant of the calcareous mass, which was found pocketed in the side of the lower segment of the uterus. This tumour would appear, from its having undergone calcification, to have been an old fibroid; to have been enucleated in the act of craniotomy, and to have slipped back into its pocket so as to allow the head to descend a second time, after a portion was broken off by the cephalotribe.

Case of Extreme Hypertrophy of Placenta, with Fatty Degeneration, in a Dropsical Subject. By Dr. JOHN BRUNTON.—Primipara, in beginning of eighth month of gestation. Lady generally dropsical; right hand and left foot presentation; feet brought down; placenta removed, and subsequently two separated portions, making the mass three times the average size. Fœtus gasped once or twice, and died. Urine of the patient highly albuminous; her face, body, and extremities showing an advanced stage of dropsy; was doing well at the time of report. Placental hypertrophy considered dropsical, and the separation of the two fragments, the result of uterine contraction upon the large mass, as there was no concealed hemorrhage, and the placental tissue was very friable.

Autopsy of a Woman upon whom the Cæsarean Operation was Performed Successfully in 1866. By Dr. WM. NEWMAN.—In the report of Dr. Radford, we find this case to be that of Ellen O., aged 27; in labour 4 days; the "cause of difficulty" being given as "*Extensive epithelioma of the cervix, and lower part of the body of the uterus.*" . . . The recent statement made to the Society shows that six years after this operation, she was delivered again by Dr. Newman, with the long forceps; that early in 1873, she claimed to be in very good health, and looked strong and well; and that in August, 1874, the old cicatrix gave way, an abscess formed, leading down into the pelvis, and discharging

through the cicatrix, and the woman died, after having some stercoraceous vomiting, and symptoms of peritonitis. . . A post-mortem examination revealed the following. Slight evidences of circumscribed peritonitis existing near the wound; no adhesion whatever of either uterus or ovaries to any portion of abdominal contents; ovaries appeared perfectly healthy; no evidences of cancer apparent. Dr. Newman stated that in 1871 there were distinct traces of scar tissue, the cervix being deeply indented and changed in structure.

General Dropsy in the Fœtus. Case reported by Dr. PROTHEROE SMITH; another by Mr. LAWSON TAIT.—Dr. Smith's was born of a delicate woman of 35, who in 13 years had two healthy living children and seven miscarriages. In the last two miscarriages (in 1874 and 1875), mother had albuminuria, with slight anasarca of extremities and face for a few weeks prior to labour. No suspicion of syphilis. Fœtus at 26th week; whole body extremely anasarcaous; no cardiac disease; abdominal organs in no condition of change to account for the dropsy. Dr. Smith attributed this to "hyperæmia of the mother, who was predisposed to hepatic derangements; hence, the bilious disorders, jaundice, albuminuria, loss of blood, and serous discharge from the uterus, which had so repeatedly attended utero-gestation," . . . and which "ushered in a train of abnormal changes injurious to the healthy relationship between the fœtus and the mother."

In Mr. Tait's case, the mother was 36, and had borne 6 children previously; liquor amnii was in large excess; fœtus attempted to breathe, but apparently failed to fill its lungs; was examined by dissection in four hours after birth. Body excessively œdematous; age computed at 7 months; abdomen enormously distended with fluid, which under the heat-test became a solid cast; no appearance of inflammation in peritoneum, pleuræ, pericardium, or tunica vaginalis testis, although all were dropsical. Cause attributed to premature closure of the foramen ovale of the heart, there remaining only a minute crescentic valvular opening, one-twelfth of an inch in its longest diameter.

Dr. James Sawyer, who conducted the examination of the heart, remarks: "I have especially examined the condition of the foramen ovale in a large number of children's hearts, and I have very frequently found the closure of the opening no more complete than in this case, even in children who have completed their first dentition, and in whom no signs of admixture of the blood of the right and left sides of the heart could be discovered." The placenta was large and œdematous, but not otherwise abnormal; the case is a very rare one.

Note on a Diseased Placenta. By LAWSON TAIT, F.R.C.S.—Mother 26; 5th pregnancy, two ended in miscarriage, and one was premature. Fœtus in fifth labour fully matured and well-grown, presumably dead, but not stated. Placenta small, and two-thirds *atrophied*, no fatty degeneration. The disease believed to exist primarily in the mother, and not in the placenta. Mr. Tait doubts the existence of fatty degeneration in the placenta, and says the appearances taken for it are never seen in the fresh placenta, and are the result of commencing molecular change due to decomposition.

Segmentary Deposit of Pigment in the Mammary Areolæ. Exhibited by Dr. GOODSON.—Girl 18; 7 months pregnant, under treatment for chorea. A portion of skin on either breast to inner side of nipple unchanged in colour; balance unusually dark. Chorea commenced prior to pregnancy. Irregularity of deposit, believed by Dr. Barnes to be due to the irregularity of action in the nervous system, connected with the choreic condition.

Case of Cæsarean Section for Deformed Pelvis. By Dr. JAMES W. OSWALD.—Woman 29; deformed by rickets; 4 feet high; conjugate diameter of super-strait, $1\frac{1}{2}$ inches; operation performed on first day of labour; fœtal

head impacted, delivered it by forceps; uterine wound closed by carbolized catgut sutures; little hemorrhage. Woman died in 62 hours. External wound healthy; cat-gut sutures all untied; about a half-pint of sero-sanguineous fluid in peritoneal cavity; no traces of peritonitis; abdominal organs generally healthy; clot in right ventricle of heart extending about half an inch into pulmonary artery, and continuous with clot in right auricle; lungs congested, masses of consolidation at apex of left, which was contracted to about a third of its normal size. Uterus showed no evidence of disease.

Dr. Routh, who performed the operation, attributed her death to septicæmia and heart-clot, the former originating in the failure of the ligatures, and consequent escape of uterine discharge into the abdominal cavity. He expressed the opinion that, with silk, or silver sutures, the patient might have been saved.

Dr. Meadows reported that in a case where he had used carbolized catgut sutures, the same giving way of the sutures, and consequently fatal result occurred. There is a decided difference of opinion as to the value of sutures in the uterus; but there is no question that in atony or inertia, the result of prolonged uterine action, the silver suture is all-important to the saving of life. Because women recover where no sutures have been used, is no argument against their being employed in many cases, especially where the uterine wound bleeds freely, the woman is exhausted, or the incision is not greatly reduced in length, and closely shut up by muscular contraction. By the use of six of these sutures, Dr. H. C. D'Aquin of New Orleans, in 1867 (see *N. O. Med. and Surg. Journ.*, July 1868), saved the life of a woman who had been in labour ten days, in whom the uterine wound bled freely, and the uterus failed to contract, so much so that its right side fell in. With a putrid fœtus in the uterus, a labour of ten days, pulse of 143, and respiration of 26, there was no hope without a close mechanical approximation of the uterine incision. Four years after the operation, there had been no inconvenience experienced from the sutures. The result in sutured cases in the United States, even after long labour has exhausted the woman, leads the reviewer to advocate the use of the silver wire cut closely, and bent down flat upon the uterine wall. A post-mortem examination, made long after such an operation, revealed no appearances of peritonitis. The wires were covered in with newly organized tissue, the result of inflammatory action around each suture; but other than this, there had been no peritoneal change. Linen sutures were used with success in one case after a labour of 62½ hours (*N. Y. Med. Record*, 1868). The usual gaped appearance of the uterine wound, and the presence of uterine discharges in the abdomen, found in post-mortem examinations after Cæsarean operations, satisfy us of the importance of using uterine sutures. R. P. H.

ART. XXIV.—*Seventh Annual Report of the State Board of Health of Massachusetts.* January, 1876. 8vo. pp. xxii., 551. Boston, 1876.

THE general Report of the Board refers with pardonable pride to some great sanitary reforms brought about through its labours. Through the success of its abattoir system, an entire suburban town has been transformed from a disgusting and unwholesome nuisance into a healthful and attractive place of residence. And an enormous pork-packing business of extreme importance to the commerce of the city has been so admirably regulated that there is no

longer any shadow of a fear that sanitary considerations may require its destruction. These are indeed proud achievements.

It is a pleasing evidence of harmonious co-operation for the public good, that the State Board requests to be relieved from the further supervision of the Boston abattoirs, by the transference of these to the charge of the Municipal Board, now fully organized and efficient.

The appointment of a State Engineer, to advise the Legislature, and to provide for the towns which may consult him the necessary counsel and information as to water-supply, sewerage, etc., is a suggestion which seems to us a wise one. It would tend to secure harmony of action between different public undertakings and prevent one community from injuring another. The remuneration of such an officer is recommended to be made by the parties consulting him. Some other recommendations here made we will return to after noticing the special reports on which they rest.

The feature of this Report which overshadows all others, and gives it this year an especial value, is a special report or series of reports prepared in compliance with an Act of the General Court. This called for the full investigation of water-supply, drainage, sewerage, pollution of streams, utilization of sewage, etc., as affecting the health and prosperity of the State. The existing and increasing contamination of the waters of the State was the motive of the legislation.

Accordingly, as a foundation for subsequent labour, the Board caused to be made a most thorough examination of the most densely populated river-basins and principal water-sheds of the State. This work was entrusted to Mr. James P. Kirkwood, C. E., of Brooklyn, N. Y., a gentleman of unusual experience and knowledge of sanitary engineering. Careful surveys were made by himself and three assistants from which maps here printed were prepared, showing the limits of all the different water-sheds. Then in regard to five particular basins, the exact location, amount and character of pollutions entering the streams was determined with the greatest possible exactness, and here recorded in tables and indicated on separate maps. One important table, too, shows for each river, the area of its basin, its population, number of mills and of operatives, the daily flow of water, and other particulars, giving the like facts for several English rivers and river-basins as standards of comparison.

After some consideration of the evidence proving that polluted water injures health, and of the real or apparent contradictions to this general rule, Mr. Kirkwood proceeds to estimate the precise amount of each refuse product which results from a certain given production in different kinds of manufactures. Thus, the making of a thousand tons of wool into cloth necessitates the removal or the destructive use of so many tons of grease, so many of soda, so many of pig's dung, so many of urine, and so on. And so for every prominent manufacture, all chemicals and other agents used are enumerated, and the waste-products thence resulting are estimated with careful discrimination. We are assisted in forming some idea of the influence of contaminated water on health by experiments, here quoted, upon fish, with very dilute solutions of the principal acids and other chemicals discharged from factories.

Now follow series of tables, for each of the selected water-courses, showing number and kind of factories draining into it, with number of operatives, and all data necessary to the correct estimation of pollution. These same facts, together with drainage area, for numerous points higher up-river, or on its branches, are also exhibited in more condensed form. Analyses of water taken from all these same points, complete the tabular presentation of results. Sug-

gestions for improvements, general observations on sanitary characteristics, and facts insusceptible of tabulation, are given in connection with each basin.

In some general conclusions, Mr. Kirkwood takes strong ground against polluted water. He fully agrees with the opinion of an English commission on rivers-pollution, that *water once contaminated with sewage can never after be trusted as perfectly safe for human consumption*. Sewage proper, often to a large amount, enters these same rivers which are recipients of factory waste.

How to protect and relieve the streams from this fearful influx of abominations, is the problem the solution of which is desired by the framers of the Act creating this investigation. It must be confessed that the difficulties of the question have not been very fully met, or rather, have not been conquered. Violent and revolutionary measures, if such were practicable, are not demanded as yet by any magnitude of recognized evil results. The central authority, if such be created, must point out in each particular case the means of cure, before it issues imperative commands. The neutralization or removal of harmful waste matters from fluid refuse, and the purification of sewage proper by irrigation, seem to be the directions in which the writer looks for relief.

The second portion of this special report is by Dr. Frederick Winsor, who considers "The Water-supply, Drainage, and Sewerage of the State, from the Sanitary Point of View." It aims especially to show by observation and by testimony, how and where, throughout the State, sewage is endangering health. Circular letters of inquiry addressed to correspondents of the Board received answers from 188 towns, and supplied much of the information here used. Before using the replies thus received, Dr. Winsor describes and illustrates some methods of removing excrement which have been more or less widely tried. He seems to favour a "pail-system" used with dry ashes.

The water-supply and system of sewerage of forty-six cities and towns having aqueducts is exhibited in a tabular form. The outlet or disposal of sewage is also shown. Of towns reporting no systematic carriage of sewage, 123 report from one-half to the whole of it as discharged into or upon the surface of the soil.

It should be noted that the medical correspondents who have answered the inquiries sent them are presumptively those whose opinions would possess the most value. And so generally do they represent the more populous districts that the communities for which they speak do actually contain 84 per cent. of the whole population of the State.

Nearly one half the answers mentioned offensive odours from sewage. Twenty-four observers connect the prevalence of definite disease with sewage. Several others suspect an evil influence on the health of their neighbourhood from this cause. Sixty-five, on the other hand, report bad odours without resulting disease.

The pollution of wells by sewage is reported by ninety correspondents, of whom sixty-three connect therewith definite production of illness. Of the latter, forty-four reports were of typhoid fever, often several cases to each foul well, as once for instance twenty cases.

Two lists are given of towns delivering sewage into streams and ponds. The first contains those instances in which the medical correspondent considers the results of this disposal as satisfactory, and the second, those deemed unsatisfactory in results. The latter category is slightly more numerous, and represents proportionately a much larger population. Dr. Winsor takes occasion to remark that the evils will naturally tend to increase; and that the most dangerous pollutions are undiscoverable by examination. The same degree of im-

purity, too, which may be borne by a strong man, may poison a feeble one; and even the former may succumb in time to an influence long resisted.

The question as to the effects of changing brooks into covered sewers, brings out some interesting information. Dr. Winsor is probably right in believing that the only safe course is to have two conduits, one perfectly tight for the sewage, and another but partly closed to carry off the natural moisture and drainage of the soil.

Of one hundred and twenty-eight towns reporting many damp cellars, ninety-seven find this condition productive of disease. Bronchial and pulmonary complaints, with rheumatism, particularly subacute, are oftenest mentioned.

Detailed reports are given from several correspondents. One concerning Boston contains a map showing present sewer outlets, and the grand and expensive system recently proposed to obviate the very grave and radical defects of the existing sewerage. Others are extremely instructive to the sanitary student, and full of warning to the people.

In a third part of this special report Secretary Folsom deals with the difficult subject of the "Disposal of Sewage." He has very recently visited Europe for the express purpose of qualifying himself for the intelligent treatment of this all-important matter.

After some general introductory matter Dr. Folsom passes to a brief examination of English legislation concerning sanitary matters, and a sketch of the history of systematic sewerage, as it arose in that country. He here finds striking examples, both of improved health and lessened death-rate among large bodies of people, through water-supply and sewerage, and of sickness and increased mortality sometimes caused by systems badly devised or imperfectly constructed.

The earth-closet and the ash-closet systems, we believe, are very fairly judged by the writer. While they can be so managed as to give immunity from the evils of open privies, and while of undoubted applicability in certain limited fields, they are yet wholly unadapted to the uses of large cities and of careless and ignorant people. In exceptional circumstances, these appliances are admirable; but as a method of solving the great problem now before us, they are utterly valueless.

Water-carriage is believed by Dr. Folsom to be, at present, the only practicable method of removing sewage from densely populated communities.

Considerable information is given us, as to the nature and working of the vacuum system of Capt. Liernur. Evidently Dr. Folsom does not regard this system as adapted to the wants of our large cities. We judge that, like the "earth-closet," it requires an impracticable degree of care, forbearance, and judgment; and besides, a very large original outlay. It should be remembered that the conditions of the sewerage problem in Holland—often actually below the sea-level—are wholly different from those of American cities. In cities below tide-water, the Liernur plan may be the only one practicable, and, therefore, desirable at any cost.

Many different plans for precipitating, purifying, and disinfecting sewage are described, and their practical working shown by the actual experience of English and continental towns. They have not proved economic successes, nor wholly satisfactory otherwise.

As to sewage irrigation, Dr. Folsom has brought together the results of a very large number of British and continental experiments, under very varied conditions. The teaching of these seems to be, that when adequately and intelligently planned and skilfully managed, sewage irrigation can be conducted without offence, without any danger to health, with the result of entire purification of the effluent water, and, to say the least, at an expense not inordinately

great. Where the processes have failed to attain the full measure of success, the reason of failure has been shown, and the remedy suggested. We do not suppose it can be absolutely proved that the effluent water in the most successful cases is surely free from the germs of cholera or of typhoid, but it answers high tests of chemical purity, is drunk by animals and men, is harmless to fish, and has retained its clearness and sweetness, when bottled, for a year.

Dairy-farming seems to be indicated as probably the most profitable kind, in using the sewage irrigation. Cattle are healthy, and the milk and its products are every way faultless. The direct produce of the soil is wholly free from any disagreeable or unwholesome quality. It will be remembered we are speaking of things as Dr. Folsom found them in the properly planned and well managed irrigation systems.

The extreme cold of our northern winters will doubtless somewhat interfere with this method of purifying sewage. Still, the experience of Dantzic, on the Baltic, with a climate very like that of Massachusetts, indicates that the evil is much less than would be expected. With a sufficiency of divided plats of land, to be ploughed in the spring, no great trouble need result from some surface accumulation during hard frost. Even at the temperature of zero, however, liquid sewage sinks into the ground.

It would have been interesting to know the exact financial results, in the best English experiments; but Dr. Folsom merely tells us that of forty-four English towns using sewage irrigation, not one recovers expenses. From our severer winters, and our more dilute sewage, he anticipates a still less favourable showing for American towns. But for our inland cities, remote from large rivers, something must be done, and that speedily. He justly says that we cannot wait for some great discovery to be made by the chemists, which shall cheaply cleanse our sewers from their perilous stuff. Hence, he counsels experiment upon this system, in the cases where relief is most urgently called for, and where the conditions seem most adapted to its success.

The concluding portion of this instructive report consists of a brief "Summary and Recommendations," signed by the entire Board, and by the gentlemen conducting the special inquiry. Much stress is laid upon the injury to health arising from dampness of soil, under and around the dwellings of the people. This is indicated by the great number of damp cellars, with consequent disease, so generally reported. Thorough drainage is insisted upon, as a duty of individuals and of towns. For isolated houses and small towns, the speediest and least offensive removal of filth and slops possible in the circumstances, to a distance and to cultivated ground, is urgently advised. Systematic water-supply should be at once accompanied by regular and well-built sewers. Legislation is counselled prohibiting any additional discharge of sewers into water-courses or ponds, without purification by irrigation. Other formal recommendations are made looking towards the practical application of the ideas embodied in different portions of the report.

The whole of this special report occupies two-thirds of the volume, is profusely illustrated with charts and plates, and forms perhaps the most important sanitary paper ever issued in this country. Dr. Folsom's contribution especially is of great value and interest.

To glance briefly at the usual sanitary essays and papers making up the general Report, we have two or three most curious and instructive instances, from the experience of Dr. H. I. Bowditch, of the terrible penalties sometimes exacted for the violation of sanitary laws in country houses.

Mr. Edw. S. Philbrick, Civil Engineer, has a paper upon "Defects in House Drainage, and their Remedies." While much attention is given to the special

conditions of Massachusetts climate and customs, this essay might prove very valuable to any one wishing to build or alter a house intelligently. The ignorance, and the wilful unfaithfulness, of builders, plumbers, and other artificers, of which sad instances are here cited, render it indeed almost a necessity for every house-holder to know how work ought to be done, and then see it so performed. Could not the Board do much good by printing large editions of single papers like this, and that of Dr. Bowditch, and some others, for popular circulation at a low price?

Dr. A. H. Nichols describes a serious outbreak of intestinal disease among boarders at a summer hotel, from the use of very foul ice.

Dr. F. W. Draper reports the commencement in Massachusetts of a movement which is to become of incalculable importance to the public weal. Registration, not of deaths but of diseases prevalent, has there for the first time been attempted. A large number of the best known and employed physicians throughout the State consented to make a weekly report, in an extremely simple form, of the maladies most common, with a mark to indicate general character as mild or severe. Even as exhibited by the first short experience of 1875, the results are very curious and instructive, and have "surpassed the expectations of many who were interested in its trial."

The usual report upon the "Health of Towns" and two or three from particular towns, contain matter of considerable interest, especially as concerning diphtheria. Dampness and filth, together, seem to have been powerful predisposing causes of the disease. Once started, contagion and infection have aided its increase.

The pressing need for Boards of Health, other than the civil authorities acting as such, is emphatically stated, for every town in the Commonwealth.

B. L. R.

ART. XXV.—*Statistics, Medical and Anthropological, of the Provost-Marshal-General's Bureau, derived from Records of the Examination, for Military Service in the Armies of the United States during the late War of the Rebellion, of over a million Recruits, Drafted Men, Substitutes, and Enrolled Men.* Compiled under direction of the Secretary of War. By J. H. BAXTER, A.M., M.D., Colonel and Chief Medical Purveyor United States Army, late Chief Medical Officer of the Provost-Marshal-General's Bureau. In two volumes, 4to. pp. lxxxvii., 568, and xxviii., 767. Washington: Government Printing Office, 1875.

THIS work is a magnificent contribution to our exact knowledge of man. Founded on carefully recorded examinations made by scientific observers, grouped and analyzed with admirable skill, it adds another notable example of the beneficent results which often flow from great calamities. Taken with other Governmental medical publications, it well justifies the wise and witty reference, by a recent writer in this Journal, to the famous riddle propounded by Samson to the Philistines. And surely neither biblical nor heathen athlete ever attempted a more tremendous labour than must have been here encountered in assorting and arranging the collected matter in such manner as to exhibit the millions of facts in all their different aspects and in forms available for use.

The introductory chapter of the first volume sets forth the plan and scope

of the work, exhibits the instructions to recruiting surgeons under different governments, and gives an outline of the history of anthropometry.

It should be noted that the examinations here recorded are not those of a special class, such as volunteered at the outset of the war. They are those of drafted and enrolled men, substitutes, and volunteers, after three years of fighting. They include alike the rejected and accepted. Thus they represent the general adult male population fairly, and were made, too, not under direction of the individual States, but of the national government. Indeed, only about one-half the records of this period are used in this work. The others are omitted on account of incompleteness; and this condition was most common before the special medical branch was added to the Provost-Marshal's Bureau, in January, 1864. We have thus complete and trustworthy records of over half a million men.

In Part I. we have a "Review of the Tables and their Results." Placing this before the tables themselves seems at first unnatural; but the plan has its advantages, among which is the collection of all the reading-matter into one volume, leaving the tables proper—exclusive of some charts and maps soon to be described—to compose the second.

In this "Review" we find explanations of terms and classifications, the disease nomenclature employed, and the kind or degree of special disabilities which was to be productive of rejection. The enrollment, we are told, was made for each congressional district; and many of the tables preserve the same division of the men concerning whom facts are presented.

The half-million measurements of height, of chest circumference, and of weight, are stated to be thoroughly trustworthy. They were made by sworn and experienced officers, with no motive to evade their duty, and provided with all proper appliances. Not quite so trustworthy, it is said, were the larger figures amassed and published by the Sanitary Commission. These were largely obtained from State records from measurements made, if made at all, under circumstances of intense desire to fill up regiments, and a feeling on the part of officers and surgeons from civil life that no man should be rejected for an inch or two. Heights too were generally measured in shoes. Thus the present work, as a contribution to anthropometry, is believed to be much more correct.

These measurements are not vitiated by the too common error of being drawn from some one class only. They embrace men of all conditions and avocations, and this alike whether they were accepted or rejected as soldiers.

Some very curious facts revealed by the stature-measures, give rise to ingenious speculations, but cannot here be dwelt upon. Roughly speaking, Americans were found about an inch taller than English, Irish, and Germans.

Chest-circumference cannot be discovered to present any fixed relation to stature, when we compare race with race. But among native Americans, the two preserve an exact and almost invariable ratio. A similar relation is revealed in the examined men of other nationalities.

Greatest growth would seem to be attained somewhere between the ages of thirty and thirty-five, or even above thirty-five, among our northern and western native citizens.

The formulæ of Brent, approved by Dr. Hammond, for determining the relations which should obtain between chest and stature, are shown to be largely in error.

The degree of expansibility of the chest varied very greatly and with little relation to its circumference. One youth weighing 114 pounds had a chest measure, at expiration, of 29 inches, but could increase it on inspiration to 36 inches. Another, slightly taller and heavier, could raise his expiration girth

only one-half an inch. He was rejected for trouble in one leg. Great expansibility of chest so frequently was accompanied by hernia as to point to some relation between the two facts. The mean mobility, for the half-million, is 2.781 inches; for 300,000 white natives, 2.807.

Statistics of weight were not required of the examining surgeons. Some, however, chose to record this fact also. The information gained from this source and from others indicates the incorrectness of the popular impression that the typical American is lacking in the weight proper to his stature.

About two-thirds of the men examined were described as blonde, the proportion being a trifle larger among foreigners than natives.

Many most curious and instructive points in this chapter we must regretfully pass by.

Part II. is made up wholly of charts and maps, with very brief explanatory comments. Charts of Class First exhibit to the eye the proportionate magnitude of certain prominent diseases as causes of rejection. Thus the first chart in this class shows by shaded spaces parallel to a divided scale, chronic rheumatism as a cause of rejection of the married, of the single, of the blonde, of the dark, of men in each different age-period, of men of different heights, and of natives of different countries. Opposite these different descriptions of men, between them and the shaded blocks mentioned, is given in numerals the absolute number of each description examined, and also the number rejected in each thousand (of that description) examined. The next score of charts shows the same facts regarding a score of other diseases or classes of disease. They are admirably clear and well executed.

Class Second consists of some half-score of charts constructed like those just described, except that occupations of the men examined take the place of nativity, age, social condition, etc. Some very curious results are here revealed, of which some can be explained by a little reflection, while others are very puzzling.

Class Third is made up of charts showing for the different States the same relations to groups of diseases as have been before shown for nativity, etc., and occupation.

Lastly, we have two charts exhibiting the relations of stature and of chest-girth, to age and nativity.

A dozen maps of the loyal States, beautifully tinted and shaded, exhibit for disease in general and particular classes of disease, their comparative efficiency, in different congressional districts, as causes of rejection of drafted men. Thus hernia, as a reason of rejection, is indicated upon a map of the whole country, coloured pink, in five different shades, with such diversity of fine lining as make them perfectly distinguishable, and expressing respectively ratios per thousand rejections, of less than twenty, twenty to thirty, thirty to forty, forty to fifty, and fifty or more. So, disqualifying eye-disease is shown in five tints of blue, upon another map. And so for others.

Part III. of this volume is quite different in character from the rest. When the war ended, circular letters of inquiry were sent to the examining physicians in all the districts, inviting a general report of their experience, and of all special diseases or special physical characters attaching to their districts and their communities. They were asked to mention how many men they could examine daily, what changes they would advise in the instructions or the causes of exemption given them, and what methods of deception or obstruction they had encountered. The replies possess much interest and value, but do not call for special notice here. We are glad that they are thus preserved. Should future generations ever be unhappily compelled to raise immense armies,

they may profit by the exposure of errors and weaknesses of which we of to-day do not need to be told.

The volume ends with a general index to the entire work, which appears to be full, and we presume accurate, judging from the care and labour evidently given to other portions of the work.

The second volume is wholly made up of tables. Of these a little more than half exhibit measurements and physical qualities in their relations to race, age, etc., while the others deal with the diseases causing rejection, in their manifold relations. As these are merely the full and original statements of the facts which we have described as exhibited more agreeably in the beautiful charts and maps of the first volume, we need only add that they show the same clearness of statement and felicity of arrangement. The whole work seems to be well done; and extremely creditable to Dr. Baxter.

The book is a monument of almost incredible labour, of a sort little appreciated by the world. Its author may, however, safely anticipate an enduring and wide-spread fame, if not the noisy but transient plaudits which reward lighter toils.

B. L. R.

ART. XXVI.—*A Manual of Percussion and Auscultation; of the Physical Diagnosis of Diseases of the Lungs and Heart and of Thoracic Aneurism.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College, etc. etc. 12mo., pp. 255. Philadelphia: Henry C. Lea, 1876.

DR. FLINT's well-earned reputation will secure for any book coming from his pen a cordial reception by the medical profession, but this little manual of auscultation and percussion has substantial claims of its own to favour, which would without this advantage render it popular. It is not unlikely that it will occupy the same place in the English language which the excellent manual of MM. Barth and Roger has so long filled in the French.

The work contains, the author tells us in the preface, the substance of the lessons which he has for many years given in connection with practical instruction in percussion and auscultation to private classes composed of students and practitioners. The plan is simple, his experience in teaching having shown him the importance of avoiding all unnecessary refinement. It has also convinced him of the necessity of the student's becoming thoroughly familiar with the physical conditions and signs of health before he attempts to study those of disease. The author therefore devotes a large part of the book to the consideration of the former. That this is the only plan of teaching which will ever be attended by success, no one will have the hardihood to deny, and yet how often in practice does the student in this country receive his first instruction in auscultation and percussion at the bedside of the sick.

The book is, we repeat, an admirable one. Few physicians since Laennec have rendered as valuable services in the field he has specially cultivated as Dr. Flint. It is not necessary to mention these in detail, since they have been for the most part appropriately noticed in the reviews of his larger works, which have appeared from time to time, in the pages of this Journal. In our opinion his observations in regard to the importance of pitch as a distinctive character of the sounds obtained by auscultation and percussion is the most valuable addition made in recent years to our knowledge of the physical signs of disease of the chest.

J. H. H.

ART. XXVII.—*An Elementary Treatise on Diseases of the Skin, for the use of Students and Practitioners.* By HENRY G. PIFFARD, A.M., M.D., Professor of Dermatology in the University of the City of New York, etc. 8vo. pp. 375. New York: MacMillan & Co., 1876.

DR. DUHRING has furnished the Medical Profession with the first American Atlas of Skin Diseases, but his complete treatise upon this subject has not as yet left the hands of the publisher, while previous attempts in this direction by American physicians, prior to the recreation of Dermatology by Hebra, are of necessity so meagre in outline and so unsatisfactory in matters of practical detail that they can hardly be considered as appertaining to the science of to-day. To Dr. Piffard then is due the credit of the first venture upon a sea as yet, by Americans, untraversed. Upon every new book rests, however, a certain *onus probandi*. It must not only give a reason for the faith which is in it, but is also actually called upon to furnish a satisfactory individual *raison d'être*. This it may do in three distinct ways. Its object may be the promulgation of truth as yet unknown. It may be the wider dissemination of truth which is for various reasons practically unobtainable by the majority. Or, finally, it may be, by compilation, selection, and condensation, to furnish a means of ready reference, and of obtaining a general knowledge of a subject, to those whose time is limited, or who demand but a superficial acquaintance with the subject matter under consideration. Dr. Piffard modestly contents himself with claiming only the last of these reasons, his object being, by availing himself of the classic literature of the subject and adding thereto his own personal experience, to furnish a volume which may serve as an introduction to the more elaborate works upon dermatology, as an elementary guide to the student and a manual of reference to the general practitioner. In his dedication of the book, however, he foreshadows more boldly the subsequent expression of certain original conceptions, wherein he stands alone among the dermatologists of this country, in that he lays claim to special opportunities for the pursuit of lines of investigation and research usually impracticable. Unusual opportunities call for exceptional results, and Dr. Piffard evidently courts criticism. But an architect may build better than he himself knows, even though he fails in precisely the points in which he takes most pride, and the field of dermatology in America offers most certainly the occasion, if the author does but avail himself of it.

The first chapter of the book is devoted to the anatomy of the skin. Its descriptions are good and clear, concise, and yet full enough. It is illustrated by wood-cuts, which are excellent, and by one photo-micrograph. Of these last there are five in the whole book, and, though good of their kind, they are yet not of the class of illustrations best adapted to a book intended to fulfil the end of being a guide to the student and general practitioner. Under all circumstances photo-micrographs labor under the disadvantage of lack of clearness. They have no sharpness of outline. If the lens is of sufficient magnifying power to give a representation of quantitative value, the quality is interfered with, since all parts of the object to be depicted, lying as they do in different planes, cannot be represented at the same time with distinctness, and the result is a blurred picture, with inferior perspective. Nevertheless, as there are but five photo-micrographs in this work to forty-nine wood-cuts, we should be sorry to even appear to cavil. The wood-cuts are also judiciously selected, partly from the works of well-known German writers, and partly from the anatomical plates of

Sappey. Though the descriptions are good, as far as they go, yet a little more fulness of detail in regard to certain structures, noticeably the hairs, would have perhaps been in place even in an elementary treatise. Though the language is, as a rule, concise, and Dr. Piffard acknowledges having often sacrificed elegance to brevity, this hardly excuses such expressions as "fat vesicles and other organs," distribution of blood-vessels to "fat vesicles;" "medullated" fibres of nerves, etc. Moreover, as far off like a little hand, the cloud of originality already peers above the horizon, and we notice the first slight straining after effect in the propounding of a new and untenable theory in regard to the formation of the horny layer of the epidermis, in defiance of the law, *de nihilo nihil fit*.

The chapters upon physiology, pathology, symptomatology, and diagnosis are sensible, and for the most part clearly expressed, and illustrate well the admitted versatility and the acuteness of observation of the author. And yet there is a marked contrast between the wealth of the armamentarium of instrumental aids to diagnosis in the valuable chapter upon that subject, a wealth possibly even too great for actual utilization by the average student or general practitioner, and the poverty, both as to number and description, of the list of individual lesions in the chapter devoted to pathology, from which list we miss wheals, tumors, excoriations, crusts, and scars, lesions which certainly "frequently concern us."

The sixth chapter is devoted to classification, and it is to this chapter that exceptions will be taken by every American dermatologist. We acknowledge the author's ability, we appreciate his inventive ingenuity, we applaud his enthusiasm, we cannot doubt his honesty, we admit his earnestness, and we object to, and join issue generally upon almost every word in this chapter. The object of the classification is "to enable the student to obtain at a glance a comprehensive view of the subject, to group together affections possessing important common characteristics, and, if possible, to give a clue to their nature, and to render assistance in diagnosis and treatment. It should be based upon a plan which appears to combine to the highest degree these several features, and at the same time, its several parts should be consistent with each other." The classification itself is as follows: I. Diathetic Affections; II. General Non-diathetic Affections; III. Reflex Affections; IV. Local Affections; V. Affections of Uncertain Nature. The defence of this classification is based upon the statement that it is a "natural or etiological system." The first author alluded to in favor of a natural system is Lorry, of France, who, in 1777, divided the diseases of the skin into two principal groups, the first comprising those of internal, and the second those of external origin, a little as if the lesions of the body politic should be defined as criminals of native or foreign origin, omitting entirely any specification of the character of their crimes or of the necessary treatment. Lorry's classification resembles the first step of the infant, and, like that, can hardly be said even to be in the right direction, as it is practically in no special direction whatsoever. The next author cited is Alibert, also of France, and under his teachings (1814), the "natural" system attained its acme. Even here we find it so vague, so unsatisfactorily diffusive, that we feel as if we had obtained the entrée of a society rather than the intimate acquaintance of the individual members composing it. Under Hardy, still of France, this system tottered to its close, wounded unto death by the blows of the more exact science of modern days, and in particular by the accurate observation and sound logical common sense of Hebra, so that it is to all intents and purposes a corpse, which our author would now galvanize into a spasmodically deceptive manifestation of non-existent viability.

The only modern authority actually quoted in favour of an etiological clas-

sification is Liebermeister, whose words apply solely to general medicine. Now a disease, as a conception, is *per se* an entity, an abnormal existing process, and a classification of processes is as different from a classification of causes as from one of results. The sole advantage claimed by Liebermeister for his Jesuitical system is that, though wrong, good may come of it therapeutically, but the fusion of exciting causes and resulting processes, in preference to regarding them as distinct subjects for consideration, is a drawback rather than an advantage. With increased knowledge, we believe diseases in general will be classified upon a histological basis; dermatology, at all events, does not come under the same conditions as general medicine. An individual cause of a general process which evinces itself by many, generally distributed manifestations, varying in their character, differs surely from identical lesions, or symptoms, confined to the skin and due to a special process which might have been set in operation by any one of many different causes. This by no means denies that certain conditions may exist which are simultaneously general and special, that is which affect coincidentally the corporeal system as a whole, and the skin as a part thereof. An etiological basis of classification is necessarily unscientific. We have to deal with material elements subject to chemical and physiological laws. External agencies acting upon parents may result in the production in the offspring of inferior material, that is such as is less resistant to the action of the same or other external agencies, or, such agencies may be powerful enough to act deleteriously upon even the best material. The result is an increase, decrease, or alteration of these material particles as to character or position. These results are lesions, and are to be classified as such. The processes of increase, decrease, or change, being abnormal, are disease, and should be classified as such. The causes, if they can be precisely ascertained and selected as individual integers from our illimitable circumfusa, may again, as such, be tabulated and classified. But potential causes, disease processes, and material results must not be confounded. It is precisely therapeutically that the etiological classification is weakest. When our house is in flames we do not stop to institute investigations with reference to the incendiary or other causes.

But our author's classification is not even etiological. Class I. represents Lorry's class of "diseases of internal origin," and unites disease processes totally different and due to various different causes, because the general system may be coincidentally affected. This is a question of place of origin of contemporary conditions of existence or of quantitative extension of causation. Class II. represents Lorry's "diseases due to external causes," and is open to the same objection. Class III. portrays, not cause, but manner of approach and action on the part of some remote agency. Class IV. narrates merely the field of action, and Class V. attempts to establish nothing. Such a classification is unappetitiously meagre and absolutely inharmonious. It is based upon a fortuitous concurrence of natural conditions rather than upon an etiological basis, and natural and etiological are no more synonyms than "subjective" and "rational." We leave it to any impartial reader of the book to say whether this classification achieves the objects adduced by the author.

Finally, as to the varieties embraced by these various groups. The terms syphilodermata and scrofulodermata are, both logically and philologically, preferable to the terms "Syphilides and Scrofulides." We object to burdening dermatological nomenclature with new expressions, as, for instance, "Rheumides," "Trichophytosis," "Phytosis versicolor," etc. We can not regard Acne, Rosacea or Xanthoma as justly placed under the head of "Reflex Affections." The weight of authority is against Alopecia areata as a parasitic dis-

ease. It may be doubted if Furuncles, etc., accord with the idea of "Local Affections," otherwise than that they are localized upon the skin instead of upon internal organs. Some of the "affections of uncertain nature" are precisely those of which most is known. We regret the absence from the list of Epithelioma, whether as "exotic" or "rare and insignificant." So also that of the diseases of the hair. The author can hardly be considered as representing the opinions of the American school of dermatology in classing together Lupus, Lupus erythematosus and Rodent "ulcer," and placing them in one category as "Scrofulides."

In the tenth chapter an old friend, or rather enemy, the "Dartre" of the French school, appears with a new face as "Rheumides," although like the Hydra's heads it has repeatedly been destroyed. This term is used to convey the idea of exudation; under this head are placed Eczema, Psoriasis, and Pityriasis, and their existence is attributed to the presence in the skin of the very insoluble products of deficient oxidation.

The remainder of the book is devoted to the consideration of individual lesions, and we gladly turn from speculative theories to more practical details. We should not have felt justified in assigning so much space to the examination of what we hold to be erroneous views except that we felt that the charge preferred against Socrates could be brought with more justice against Dr. Piffard, and that there existed a danger of his doing much harm by instilling false precepts into the minds of the young men who listen to the words from his professorial chair.

The separate affections of the skin are well described; the ability and industry of the author are shown in his advocacy of thoroughly sensible methods of treatment and by the large amount of original work in the line of histological investigation, where, however, the vegetable parasites are conspicuous by their absence. Enthusiasm is manifested throughout by the style of writing, by the independent experimental therapeutics, and by suggestions, modifications, and inventions in regard to instruments. The therapeutical part of the volume is in fact its strong point. It is excellent, and shows good judgment, close observation, and extensive study of other authors. Yet the consideration of the "non-diathetic" affections is entirely omitted, a fact all the more to be regretted on account of the value of the remarks in regard to the treatment of the others. And yet the amount of space devoted to the different lesions is rather out of proportion to their importance, some receiving a too liberal consideration, while the value of the remarks upon others is impaired by brevity of notice. Taken as a whole, however, this part of the work is interesting reading and possesses much merit.

But on page 374, under the heading Vitiligo, there occurs a strange error in translation, to which no reviewer has as yet alluded. In justice to Kaposi, we must call attention to the fact that he does *not* speak of "the use of such blistering preparations as will remove the color from *the rest of the surface*," but merely from the deeply pigmented *border* of the spot of vitiligo. The "rest of the surface" possesses no excess of color, and, by the removal of the dark border of the spot of Vitiligo, the latter, being without color, will present a less marked contrast with the rest of the body than did its pigmented environs previously existing. We might add that the term Ephelis has been dropped as false "etiologically" by most dermatologists, and the term Lentigo substituted.

The type and paper of the book are exceptionally good, though the metastatic nature of the colouring matter of its binding detracts somewhat from the value of the volume as a *vade mecum* in summer weather.

E. W., Jr.

ART. XXVIII.—*Atlas of Skin Diseases*. By LOUIS A. DUHRING, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania; Physician to the Dispensary for Skin Diseases, Philadelphia, etc. Part I. Philadelphia: J. B. Lippincott & Co., 1876.

As this Atlas makes the third series of illustrations of diseases of the skin now in process of publication, the others by Fox, in England, and Hebra, in Vienna, the question naturally arises, Is there need of such works? No one can answer this question so well as the teacher in dermatology; so that the very fact of their preparation by men of such position and character should be regarded as the most satisfactory reply. It is, in fact, impossible to study affections of the skin properly, unless the eye be afforded the opportunity of seeing just what the teacher attempts to describe by words or book; and no word-painting, however accurate or graphic, can represent the endless and varying minutiae of colour, outline, and surface change, upon the proper interpretation of which the diagnosis and successful treatment of these diseases so greatly depend. But it is only within these latest years that any sufficient opportunities of clinical instruction in dermatology have become possible in this country, and even now they are to be found in a very few only of our largest cities. In these most favoured centres of medical education, even, the teacher cannot always, or immediately, command the requisite number and variety of cases for the proper illustration of a systematic course in dermatology, or find, indeed, any examples of the rarest forms of disease, of which he has to speak. Even with the most abundant clinical material, other means of illustration, models, plates, photographs of appearances, are constantly brought into service by the most experienced dermatologists in their courses of instruction to students, as desirable adjuncts or necessary substitutes. To the teachers of the scores of less favoured schools of medicine all over our country, portraits of skin diseases furnish too often the only means within their reach of affording tangible proof of the existence of these affections, and to the student of recognizing them, when encountered in his future practice. There can be no question, therefore, of the need of such works to teacher, student, and physician; but of what character shall they be?

The magnificent and costly Atlas of Professor Hebra is far beyond the means of the profession at large; and there has long been wanted a work which should faithfully present the common affections of the skin, in their various forms; a practical handbook of illustrations to accompany the text-book, and which yet should be within the power of every physician or student to possess. Such a want it is the purpose of Dr. Duhring to supply in the publication, of which the first part is now before us. To this end he has selected typical cases of disease, and had them painted and chromo-lithographed by Messrs. Faber and Moras, artists well known in connection with medical subjects. With each picture—which presents the appearances nearly of life-size—he gives a description of the case, with brief, practical remarks upon the nature of the disease, and the appropriate treatment. Four plates will be published at a time, as many, in all, as shall sufficiently represent the more common cutaneous affections in their most important varieties. They will be published in no regular order, and when complete, may be arranged or bound according to any system of classification the owner may prefer.

This purpose has been well fulfilled by the author in the first part. The subjects of the illustrations are judiciously chosen, and the artist's work—

both drawing and coloring—remarkably well done. Two of the affections, eczema (erythematosum), and lupus erythematosus, are especially difficult of representation, on account of the want of prominence of their lesions, while the characteristic forms of efflorescence of the other two—psoriasis and syphiloderma pustulosum—are among the most conspicuous of the manifold appearances presented by the skin in disease. The history of the case, and the description of the lesions represented in the plates are written in an admirably clear style, and the brief account of the nature of the respective affections and their treatment, will make the Atlas in itself a simple and valuable treatise on skin diseases. For a fuller account of his views of these affections, Dr. Duhring refers the reader to his general work on dermatology, to be immediately published.

The Atlas is a credit to the author as a dermatologist, to the artists who have worked so faithfully upon it, and to the publishers for the excellence of its general appearance, and deserves the most liberal support from the profession.

J. C. W.

ART. XXIX.—*Medical and Surgical Memoirs; containing Investigations on the Geographical Distribution, Causes, Nature, Relations, and Treatment of Various Diseases, 1855-1876.* By JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine, Medical Department University of Louisiana, etc. etc. 8vo. pp. xviii., 820. New Orleans: Printed for the author by Clark & Hofeline, 1876.

THE object of these memoirs, the author tells us in his preface, is to place in an accessible form the results of his investigations and researches which were begun during his student life at the University of Pennsylvania, and which have been carried on, in spite of many obstacles, ever since. The work, when completed, will consist of three volumes. The contents of the first volume are: Introduction to the Study of the Nervous System; Investigations on Traumatic Tetanus, Epilepsy, Paralysis, and Cerebro-spinal Meningitis; Clinical Observations on Diseases of the Lymphatic and Circulatory Systems, and of the Liver and Kidneys; Investigations and Researches on Pneumonia; Observations on Diseases of the Osseous System. Illustrated by 800 cases of disease, 400 physiological experiments, 95 analyses of the blood and urine, and 60 tables, illustrating the symptoms and mortality of diseases under different modes of treatment and in different climates. In the second volume will be grouped the monographs relating chiefly to Endemic, Epidemic, and Contagious Diseases, embracing Malarial Fever, Yellow Fever, Typhoid Fever, Smallpox, Cowpox, Syphilis, Measles, Cholera, Cholera Infantum, and Dysentery. The third volume will embrace, more especially, the consideration of the diseases and accidents of armies, and such observations on the medical and surgical history of the Confederate Army, as the author was able to make himself or to obtain from the Confederate medical officers. Dr. Jones's reputation as a hard worker and conscientious observer is a sufficient guarantee that the work will be a valuable one—a guarantee, moreover, which the first volume, so far as we have had time to examine it, fully bears out. It is certainly the most ambitious of the medical works printed or published in the South.

Chance, to a certain extent, led us to read the articles on Cerebro-spinal Meningitis and on Pneumonia. The author begins the article on the former of these diseases by a review of its literature. This has led him to the conclusion

that cerebro-spinal meningitis has prevailed at various times and in all countries, and it appears, he says, in its outbreak to have been governed by no fixed laws as to duration, origin, locality, and climate, these having occurred simultaneously in the most widely separated countries presenting the most diversified conditions of soil and climate, and it has attacked alike the most salubrious and healthy towns. He believes, on what, however, seems to us rather insufficient evidence, that cases were observed and have been recorded by Hippocrates.

His observations have convinced him that the disease is more nearly allied to the phlegmasiæ than to the fevers. We shall give his reasons for this opinion in his own words.

"1. Cerebro-spinal meningitis is characterized by true *inflammatory symptoms*, viz.: Increase of fibrin in the blood, elevation of temperature, derangement of digestion and aberration of nervous and muscular phenomena. Unlike the true fevers, the blood is charged with fibrin, and fibrinous deposits are found within and around the inflamed meninges of the brain. 2. Post-mortem examinations in New Orleans confirmed my previous view that the disease consists essentially of an inflammation of the arachnoid and pia-mater of the brain and spinal cord, and that in some cases the structures of the cerebro-spinal centres may be involved in the inflammation. 3. The fatality attending the disease must be referred to the character of the organs involved, and also to the destructive effects caused by the pressure of the coagulable lymph and effusion within the unresisting bony cavity of the cranium and spinal cavity. . . . 5. The duration of the disease is not governed by fixed laws, as in the idiopathic fevers, as smallpox, varioloid, scarlet fever, and typhus and typhoid fevers, but is governed by the nature and extent of the primary and secondary local lesions."

Holding this opinion of the pathology of this disease, it is not surprising that the author should recommend very active antiphlogistic measures in its treatment, a plan of treatment which, however, experience has shown to be very unsuccessful, and which has been consequently very generally abandoned. The article contains several tables, the reports of many cases, and a chapter on the "Relations of Cerebro-spinal Meningitis to Malarial Fever," and may justly be regarded as one of the most important contributions to the literature of this disease made within several years.

The prevalence of pneumonia in the Confederate Army and the high rate of mortality among the cases treated in the field and in the general hospitals induced Dr. Jones to urge upon Surgeon-General Moore, of the Confederate Army, the importance of a thorough examination of the relative value of the different modes of treatment employed by Confederate Army surgeons. This examination he does not appear to have been able to carry out fully, although he gives us the results of his investigations in a tabular form near the close of his paper. These have led him to adopt, in his own practice, the restorative plan of treatment as the most successful. The statistics which he has collected show that pneumonia prevailed to the greatest extent in the most elevated and northern regions of the Southern Confederacy, and in the armies which were subjected to the severest labours, privations, and exposures. In regard to the relations of pneumonia to malaria, the following are his principal conclusions:—

"Whilst," he says, "the malarial poison cannot be said directly to produce pneumonia, still it is capable of inducing such changes in the blood and in the nutritive and excretory processes, as to dispose the system to this and other inflammations, and therefore the physician should never, in the treatment of pneumonia, in those who have been exposed to the action of malaria, lose sight of its effects in complicating inflammation of the lungs, and of the consequent necessity of arresting at once, if possible, the further action of the malarial

poison. As no remedy can compare with quinia for the accomplishment of this result, its use in the present state of our knowledge appears to be imperatively demanded in the treatment of pneumonia arising in malarious regions, and presenting well-marked and recurrent paroxysms." J. H. H.

ART. XXX.—*A Treatise on the Diseases of the Nervous System.* By WILLIAM A. HAMMOND, M.D., Prof. of Diseases of Mind and Nervous System in Univ. of City of New York, etc. etc. Sixth edition, Rewritten, Enlarged, and Improved. 8vo. pp. 883. New York: D. Appleton & Co., 1876.

THE force of almost any criticism upon a work which has reached its sixth edition seems broken in advance, and if we accept the truly American standard of pecuniary success, the merits of the work before us are undoubted, because its sale has been large. Perhaps, however, there may be some who will look further for evidence.

In the review in this Journal (January, 1872) of the first edition, the "hasty and confident" style of the author is spoken of, and various instances adduced to justify this criticism. Most of these remain in the present edition, although the author says that he "has not failed to take into consideration the suggestions of his critics."

In the introduction, the author describes the instruments and apparatus employed in the diagnosis and treatment of diseases of the nervous system, first of which is the ophthalmoscope, about a page being given to the explanation of its use. He says "the real value of ophthalmoscopy in diseases of the nervous system is in danger of being disregarded through the sciolism of pert pretenders, who read papers and write memoirs without ever having seen the optic disk to recognize it." This may be true, though it does not appear at whom the thrust is aimed; but there are certainly those who fail to discover the close relationship, which the author assumes, between the brain and the optic disk, who are neither sciolists nor pert pretenders.

Various other instruments are mentioned; among them, Dr. Lombard's delicate thermo-electric differential calorimeter. Is the scientific value of results obtained therewith proportional to their apparent delicacy? The thermometer is almost ignored. Is it because it is really less valuable than the more complicated apparatus, or because it illustrates less strikingly the rapid march of "modern science"?

A careful review of the body of this work would be a difficult task, for on every page we find, among solid and valuable statements, sometimes original, but largely borrowed from Charcot and his pupils, Duchenne, Lockhart Clarke, Hughlings Jackson, and many others, all sorts of hasty and inaccurate assumptions and some omissions, evidently depending only upon the hurry in which the book was prepared. Thus under alcoholism, the author says, p. 866, "digitalis is the most active agent we possess as an eliminant of alcohol through the kidneys." Now digitalis is only sometimes a diuretic; no one has shown that it acts specially on the excretion of alcohol, and, what is more to the purpose, there is no reason to suppose that the elimination of alcohol from any of the excretions has anything to do with the removal of its effects. It is burnt up in the body, and the most abundant proof of this fact is easily accessible. On page 872, he directly contradicts what he is repeatedly saying, speaking of the "influence which the bromides exert in *augmenting* the quantity of blood in the brain."

In the next edition we trust the author will tell us whether he has known sciatica produced by pressure from the enlarged prostate (p. 832), and, if so, how large the gland may have been, and what was the shape of the pelvis?

In quotation the author is usually but not always careful. But we notice for Deneffe "Seneffe;" and certain statements in regard to bromide of potassium are credited to Dr. Clarke (p. 873), which really belong to Dr. Amory.

Among the points in which change has taken place from the first edition we observe: "Neuralgia" becomes "neural hyperæsthesia"—a title which has no advantage except that of length, and the disadvantage of being incorrect—since a nerve may transmit or originate much pain (neuralgia), while at the same time its capacity for normal sensations is greatly diminished (anæsthesia). Writers' spasm becomes "anapeiratic paralysis." The classification of the inflammations of the spinal cord has been changed and made to include a large number of separate affections. Catalepsy and ecstasy appear with hysteropilepsy—the account of which is mostly borrowed from Charcot—under the common head of hysteroid affections. Neuritis (acute and chronic) and tumours of nerves are separately treated of; and a new section has been added on toxic diseases—plumbism, alcoholism, bromism, hydrargysm! arsenicism.

The most remarkable addition, however, is that made to the pathological anatomy of hydrophobia, which was, indeed, prophesied in the first edition.

Dr. Hammond claims to have discovered in the cerebral convolutions, in the pons, medulla oblongata, and roots of the pneumogastric, a condition of granular degeneration, with formation of fat granules, amyloid corpuscles, and nuclear proliferation of the white matter in the anterior and posterior columns of the spinal cord. The accompanying figures illustrating the text we presume to be those published in the *New York Tribune* of July 1st and 7th, 1874.

When a person puts forward a claim to an important histological discovery, or even the confirmation of appearances observed but once or twice before, it is certainly no more than prudent for those who have been unable to see the original demonstration to look for some evidence that the observer is familiar with his subject. Whether other persons have seen in these sections what Dr. H. claims, we do not know; but neither his descriptions of the methods of preparation, his sketches of the abnormal tissues, nor the other products of his pencil inspire us with confidence in the accuracy of his observations.

His methods were not those usually employed by histologists for the nervous centres, the descriptions are meagre and by no means clear; no drawing which is given would enable one to locate the lesions anywhere, and their general appearance betokens either coarse preparation or coarse drawing. Nothing is said of the way in which the sections were made transparent, and if they were not made transparent at all, it is very difficult to understand how they could have been "sufficiently thin." Fig. 91, for instance, which purports to be from the nuclei of the hypoglossal and pneumogastric nerves, gives not the slightest indication of its locality, and looks very little like anything we have seen there in a good many observations of this region.

As to the nuclear proliferation of neuroglia cells, figured on p. 658, there is not the slightest reason to suppose that they came from the white substance of the cord, and a great many to suppose the contrary. In order to have appeared of the size represented, they must have been viewed with a power many times higher than that employed upon the other cells, a fact not hinted at in the explanation (compare fig. 91), and could not have been seen without making the section very thin and very transparent, a process which would probably have removed the fat said to have been found. The "remarkable deficiency of all cell structure," naively noted by Dr. H., is very interesting. We remember to

have frequently met with this phenomenon in the examination of nervous structures during our early days of microscopy. Perhaps the absence of cells in the normal position will account for the extraordinary structures found in the white substance.

The author states that "many illustrations, which can scarcely fail to elucidate the text, have been added, so that the number now exceeds a hundred. Most of them are original; others are taken from the monographs of Duchenne, Charcot, Friederich, Lockhart Clarke, and other French, German, and British authors." Of the illustrations added, 17 are from Charcot and 8 from his pupils, being, of course, among the best in the book. The text, it may be added, is under almost equally great obligations to Charcot and his school. The style, as might be supposed from the mental characteristics of the author, is direct, clear, and positive.

In conclusion, it may be said that the present edition is enlarged, but not essentially improved; or, at least, not improved relatively to the time at which it was written. The faults of the first, we regret to find, are just as glaring in the sixth. The same hurry and incompleteness, the same want of mental digestion, the same hasty assumption of unproved theories, and generalizations from insufficient data, mark the present as the past.

If, however, one wishes a comprehensive *resumé* of the present state of neurological theories and practice, and if himself sufficiently familiar with the subject, or with the work of others to keep him constantly upon his guard, the book will be a useful addition to his library. R. T. E.

ART. XXXI.—*On certain Endemic Skin and Other Diseases of India and hot Climates generally.* By TILBURY FOX, M.D., F.R.C.P., Physician to the Department for Skin Diseases in University College Hospital, Author of various works on Skin Diseases, etc. etc., and T. FARQUHAR, M.D., Surgeon-Major H. M.'s Bengal Medical Service (retired), etc. etc. *Including Notes on Pellagra, Clou de Biskra, Caneotica, and Aleppo Evil* (with five plates). By H. VANDYKE CARTER, M.D. Lond. Surgeon-Major H. M.'s Indian Medical Service, etc. (Published under the Sanction of the Secretary of State for India in Council.) 8vo. pp. 288. London: J. & A. Churchill, 1876.

THE greater portion of the work before us is of the character of a report, the origin of which may be briefly explained. Some four years ago, Drs. Fox and Farquhar, with a view to obtaining more definite information concerning the cutaneous diseases of India, prepared a chart, the title of which—"A scheme for obtaining a better Knowledge of the Endemic Skin Diseases of India"—fully sets forth its object. The scheme was carefully drawn up, and embodied the existing state of European knowledge concerning the diseases considered, in the form of a concise description of the clinical features of each disease. It moreover indicated doubtful points, and the questions to be determined in regard to them, and, in conclusion, asked for replies to a series of questions. Attention was directed to the following diseases: morphœa; scleroderma; fram-bœsia; Delhi sore; keloid; fibroma; ainhum; elephantiasis Arabum; the fungus foot of India; elephantiasis Græcorum; leucoderma; tinea versicolor; Burmese ringworm; Malabar itch; and lichen tropicus. A large number of copies of the scheme were circulated by the government throughout India, China, Japan, Egypt, Algeria, Norway, Sweden, Canada, the West Indies,

Sandwich Islands, and elsewhere, from whence it was thought likely that valuable information might be obtained. Replies were in time received from a number of medical officers and others throughout these countries, from which the report before us was compiled. A summary of the information received has been made by the authors of the volume, while the more important of the original letters and replies appear in a condensed form as "appendices" to the report.

Having thus given an outline of the work, its scope, and the manner in which it was prepared, we take pleasure in calling attention to the large amount of valuable matter which is to be found within the volume. The information has not merely been collected from the various sources, but has been closely studied and utilized by the authors. From the mass of correspondence, such as must necessarily have resulted from an undertaking like the present, they have extracted the interesting points and have presented them in the shape of readable, short, practical papers. On every page we recognize the evidence of much labor, for to condense intelligibly so vast an amount of material, is a task involving discrimination, time, and patience.

Concerning morphœa, a rare disease, encountered, however, we think quite as frequently in this country as in England, we learn but little. From the various reports, it is indeed questionable in our mind whether the affection is met with at all in India. We presume it was introduced into the scheme merely for the sake of determining one point (which has been the subject of much controversy in England), namely, whether any relation exists between the morphœa of modern writers and the so-called morphœa of leprosy. This, as we view the matter, is a question about which no serious discussion should ever have arisen, for these diseases have never possessed anything in common beyond an unfortunate name. One is a peculiar atrophic affection, met with in communities where leprosy is unknown, the other a well known and not uncommon manifestation of leprosy. We may, however, now state more definitely, on the authority of the report before us, that no connection exists between the morphœa of modern writers (described in the scheme) and the circumscribed, yellowish, macular patches of leprosy. We are glad to see this question at rest, and trust sincerely that it may not be revived. We must, moreover, take exception to the view promulgated in the scheme concerning the relationship of morphœa and scleroderma, namely, "that morphœa and scleroderma are modified phases of the same disease, the former being the more localized and the latter the diffused form of scleriosis." We do not think that the clinical (and certainly not the pathological) experience which has been brought forward warrants such a conclusion. It is true, that some of the reported cases (we have in mind a case presented to the London Pathological Society in Dec., 1869, by Dr. Fagge, which we had the pleasure of seeing) appear to partake of the nature of both diseases, but the majority are either scleroderma or morphœa, and not a compound of the two as the description in the scheme would indicate. The characters of scleroderma are sufficiently well known; those of morphœa, on the other hand, have not been so accurately described. We recognize two forms of morphœa (and it is proper to state here that our views are based upon a clinical experience of eight cases), one characterized by the well known, circumscribed, yellowish, atrophic patches; the other by a variety of lesions, all of which may or may not be present, consisting of pit-like depressions in the skin, bluish or reddish tortuous lines, whitish atrophic streaks (*striæ atrophicæ cutis*), yellowish or brownish pigmentary deposit, together with one or more centres of disease, reddish or purplish in colour, followed at times by peculiar, yellowish, hard, horny, cicatriform, roundish, or elongated band-like lesions. The process is a very complex one,

and worthy of the most careful study; as yet our knowledge is far too limited for us to arrive at definite conclusions concerning its nature.

From the replies to the interrogations concerning scleroderma, we learn that this disease is very rare in oriental countries, and that it is not met with in connection with leprosy.

Frambœsia, or Yaws, is next upon the list. It is unknown in India. Our knowledge of this disease is derived chiefly from the West Indies, where it is common. An extensive summary of Dr Gavin Milroy's "Report on Leprosy and Yaws in the West Indies," published in 1873, is given, from which a very satisfactory idea of the disease may be obtained.

The subject of the Delhi sore is taken up with manifest interest, and a discussion of its nature and peculiarities entered into. Concerning its cause but little has been ascertained. It is unquestionably endemic in certain unhealthy localities, as at Delhi and in the surrounding country. From all accounts, the disease attracted no marked attention until 1857, when large bodies of troops were for the first time stationed within the walls of Delhi, numbers of whom, as many as from fifty to seventy per cent., were attacked. The troops stationed at Delhi in 1872 suffered in a like manner. The special circumstances determining the development of the malady are as yet undetermined. In the absence of more definite knowledge, the authors state that "it would seem that the disease is best explained as the result of a vitiation of the nutrition of the body as a whole, the consequence of the operation upon the latter of climatic influences which deprave that nutrition. Delhi sore, in fact, appears to be a local manifestation of a cachectic condition due to residence in unhealthy localities." It appears from the report, that with the institution of sanitary measures of late years, there has been a marked decrease in the prevalence of this disease at Delhi; a strong argument certainly in favor of the cause just referred to.

In connection with Delhi sore we have an able article from Dr. Vandyke Carter on Biskra, Crete, and Aleppo "boutons," disorders occurring at Biskra (in Algeria), the Island of Crete, and at Aleppo (in Syria). Dr. Carter spent some time in these places studying these diseases. From his observations, and the report of Dr. Weber, stationed at Biskra, we learn that Biskra bouton "is a specific, inoculable malady, endemic to certain unhealthy localities, attacking persons of every rank and at all ages, immediately, or at a varying interval after their arrival in the localities of the occurrence of the disease; beginning locally by a papulation, attended with itching, which papulation tends to become an indolent pustule, covered over in time by crusts, and giving place to indolent ulceration of greater or less degree, and covered or not by crusts. The disease may assume a serpiginous form or not. It leaves behind indelible, punched out like cicatrices of dark colour. The 'boutons' vary in number; there may be one or many, and the limbs and face are the chief seats of these 'boutons.' The disease may recur once or more. It lasts on an average six months." It is further stated that the disease attacks animals, and especially the noses of dogs.

At Crete, Dr. Carter, in the course of his investigations, made the discovery that a disease known by the name of "caneotica" existed there, and that it was the same affection as Aleppo evil. It is said that this "caneotica" was introduced into Crete some years since from Syria. From these studies we arrive at the conclusion that Delhi sore, Biskra, Crete, and Aleppo "boutons," are one and the same disease, differing only in minor features. This information is a valuable contribution to our knowledge of oriental dermatology. Four instructive chromo-lithographic drawings by Dr. Carter are given, representing Biskra, Crete, and Aleppo "boutons," from which we obtain a very satisfactory

idea of the characters of the lesions. It has recently been stated¹ that there is in reality no such disease as Aleppo evil; that not only the so-called Aleppo evil, but that all of the diseases of this character are modifications either of syphilis or lupus. We are, however, not prepared to accept Dr. Geber's views until further inquiry and investigation shall have been made. The accurate descriptions of the several diseases given by able surgeons in the volume before us speak loudly in favor of the diseases being specific processes, and not syphilis or lupus. Our conclusions must be drawn, not from the experience of one or two observers, residing in one locality, but from the accumulated evidence of the numerous observers scattered over the various districts in which these disorders are endemic.

The most interesting subject in the report to us, as Americans, is elephantiasis Arabum. The authors have collected and summarized the information received in a manner at once interesting and useful. From the various reports of medical officers stationed at India, China, and elsewhere, it appears that the disease is met with much more frequently in some districts than in others, while on the other hand, in certain sections it is almost unknown. A communication from Mr. Saville, of Hualine, Society Islands, states that it is exceedingly common both there and in the neighbouring islands, so common, indeed, that according to his observations at least seven-eighths of the entire population are suffering from the affection. It is said that it is very much more prevalent now than formerly. This latter observation relative to other countries has been made by other reporters. Mr. Saville, in his paper, goes on to say:—

“Foreign residents are as obnoxious to its attacks as the natives themselves. We have now fourteen Europeans and Americans resident upon the island, all of whom have resided here more than two years, and some more than twenty years. Of these eleven are heavily afflicted with elephantiasis Arabum; three of them in both legs and both arms, one in one arm and a scrotal tumor, another in both of the lower limbs, two in both of the lower limbs and a scrotal tumour, and four with only one of the lower limbs affected. So that only three of the fourteen foreign residents are free from the disease, and in these three I include myself and wife.”

This is truly a startling percentage; quite sufficient, we should say, to alarm any one contemplating a sojourn in these islands. The letter, from which we have just quoted will amply repay perusal, as indeed will the majority of those relating to this disease. We also take pleasure in referring to an elaborate and valuable paper by Mr. Vincent Richards, of Balasore, India, giving a carefully prepared analysis of six hundred and thirty-six cases of elephantiasis Arabum.

Confining our attention to the striking features of elephantiasis Arabum, we find that it is more common in males than females. In Mr. Richards' cases, the proportions were fifty-nine per cent. males, and forty per cent. females. This percentage is about in accord with the observations of authorities. Concerning the social position of those attacked, it has been found, that, although of more frequent occurrence among the poor and ill-fed classes, those in well-to-do circumstances are by no means exempt. The information received does not point very conclusively to particular occupations suffering more than others, although it is the general opinion that those exposed to the sun in damp regions are especially liable to be attacked. It ordinarily makes its appearance between the ages of fifteen and forty. It is very seldom encountered before puberty. In all of the countries from which communications were received, observers

¹ See an interesting paper by Dr. Edward Geber, in the *Archiv. für Dermatologie und Syphilis*, Heft. iv., 1874.

agreed that the leg was the region most frequently involved; according to Mr. Richards' paper, it was the seat of trouble in ninety-five per cent. A point of interest in the pathology, is the relation of the febrile attacks, which accompany the disorder, to the local manifestation. Although the reports which refer to the order of the symptoms, and to the relationship of these two sets of symptoms in particular, are somewhat conflicting, we learn that the disease may develop gradually without fever, with or without enlargement of the glands; or, on the other hand, that the first evidence of the disease may consist in a painful and swollen condition of the glands, with fever. The bulk of the evidence, in our opinion, seems in favor of the fever being symptomatic of the lymphatic inflammation.

Concerning the treatment but little new has been brought forward. Change of climate, without doubt, offers the best means of recovery. According to Dr. Fayrer, who has had much experience with this disease, it may be completely arrested if change of climate be instituted in the earliest stages. Surgical treatment is very frequently employed in the East, as here; apparently with more success.

The so-called fungus foot of India, termed also mycetoma, is next considered. Of the nature and cause of this affection, the investigations brought about by the scheme seem to have thrown no light. At the same time, the several reports confirm the view of there being two distinct forms of the disease, as held by the more recent writers on this subject. In one form, there are found in loculi or sinuses in the attacked part, usually the foot, black, "truffle-like" masses of fungus; in the other form, the same condition of the tissues of the part exists, with groups of small, opaque bodies or granules resembling masses of fish-roe, but no fungus. Dr. Vandyke Carter, who has made extended researches into the subject, considers the "fish-roe" bodies to be fungus, and therefore holds that both varieties of the disease are parasitic. This view, however, is not corroborated by other observers. It is maintained by the authors that these fish-roe-like bodies are essentially fatty in nature. The pathology of mycetoma, therefore, still rests in uncertainty.

The nature of the several varieties of disease known by the names of Burmese, Indian, Chinese, Tokelau, and other "ringworms," although long suspected as being forms of *tinea circinata*, has been involved in obscurity. This doubt has been cleared up in a most satisfactory manner. There appears to be but one opinion among the various observers, and this is that all of these affections are one and the same disease, the *tinea circinata* of modern authors modified by climate and other circumstances. It is very common throughout India, China, and the East generally, attacking for the most part the poorer classes. It not infrequently assumes remarkable development, and constitutes one of the most troublesome affections to which the natives and others of these climates are subject. According to Mr. Ghosal, of Bankipore, India, it shows itself in three forms. In the first of these the eruption appears as somewhat elevated rings, with slightly raised, papular, red margins. The surface is dry, furfuraceous, and very itchy. When scratched it yields a thin, watery secretion, which continues to ooze for some time. The second form resembles the first in all its characters except shape, which instead of being in exact circles, or rings, is irregular. The third form resembles the second in shape, but is eczematous. There is greater irritation, and scratching is followed by an inflamed surface with vesicles and pustules, and a discharge which dries into crusts. The fungus grows luxuriantly in hot and rainy weather, and withers in winter. It attacks, especially, the inner aspect of the thighs, the back, the pubic region, the buttocks, behind the ears, the nape of the neck,

and the umbilicus; it is rare about the face. It is said that the Indian boatman's back is generally well covered with ringworm.

We have thus drawn attention to some of the more interesting points contained within the volume under consideration. We commend it heartily to all engaged in dermatology, feeling confident that they will find much valuable material within its pages. The work cannot fail to be a means of stimulating the study of this class of diseases throughout the Orient and other tropical countries.

L. A. D.

ART. XXXII.—*International Exhibition, 1876, Official Catalogue.* 4 vols. Philadelphia: John R. Nagle & Co., 1876.

IN the preceding number of this Journal we gave a sketch of the medical exhibit at the International Exhibition, made by the United States Government. In this issue we give a brief survey of some of the remaining portions of the general exhibit which are of particular interest to the medical profession.

In the Swedish department there are some medicated leaves exhibited by G. Peltz, of Stockholm, and made according to a plan claimed to be invented by Prof. Almen, of Uppsala. The process consists in pouring the drug used into dissolved gelatine, which is then baked into thin leaves divided by lines into small squares, each corresponding to an ordinary dose. They closely resemble the medicated disks which for some time have been used in ophthalmic surgery, and which have also recently been prepared for hypodermic use.

In the class of periodical literature, the only exhibit made is by Prof. Axel Key, of his well-known *Nordiskt Medicinskt Archiv*, which was begun in 1869, is published quarterly, and contains able contributions from the leading medical minds of Sweden, Norway, Denmark, and Finland. An excellent feature of this journal consists in a summary in French of all the original articles contained in the number. Prof. Key also exhibits, in connection with his colleague, Prof. G. Retzius, the first part of their superb atlas of studies in the anatomy of the nervous system and connective tissues.

Prof. Zander, of Stockholm, exhibits in Machinery Hall a series of apparatus for mechanical gymnastics, consisting of twelve different machines, of which seven are intended for active movements, and five for passive motion. The whole set forms part of the gymnastic apparatus (stated to number fifty) used in the Mechanico-Therapeutic Institute of Stockholm. All those intended for passive motion are worked by steam, and have a scale by which the patient is enabled to regulate their force, and gradually to increase the action of his muscular system, and also to ascertain exactly how much he may have gained in power.

From the educational exhibit we learn that in Sweden there are two universities, viz., Uppsala, the oldest (1477), and Lund (1668), both of which are wealthy, and receive annually large grants from the government. Each contains a valuable library, that at Uppsala numbers 180,000 volumes and 8000 MSS., that at Lund upwards of 100,000 volumes. In addition to the medical faculties of these ancient universities, there exists a third school, the Royal Carolian Medico-Chirurgical Institute at Stockholm, the origin of which may be traced back to the year 1667. This school is also liberally aided by the government, and is under the superintendence of the Chancellor of the University of Uppsala. The number of teachers in this school is twenty-two, of which

eight are professors, five extra professors, five adjuncts, and four docents. The number of scholars averages one hundred.

In the Netherlands exhibit, are a series of plaster of Paris bandages made by Dr. A. Mathijssen, according to his method, first introduced in 1851. It consists in using strips of coarse flannel rubbed on both sides with fine, dry plaster, and then rolled up very loosely and laid in water for a few moments before application.

That, however, which undoubtedly is most interesting to the physician in the collection of the Netherlands and her colonies is the superb herbarium, illustrating cinchona cultivation in Java. The collection comprises specimens of the bark of every variety in all stages of growth, of the wood and leaves, and of the derivative alkaloids. The Dutch Government, actuated by various motives, in 1851, undertook the introduction of the cinchona tree into the Island of Java. The first tree was brought from Paris, where it had been raised from seed imported from Bolivia. In the following year, Dr. J. C. Hasskarl was sent by the Government to Peru, to collect cinchona plants and seeds; and seeds were also obtained from Madras, Bolivia, and New Granada. The plantations in this way begun have prospered exceedingly. At the end of March, 1875, the Government had seven plantations, covering an area of about 1500 acres, and containing 2,020,810 plants. Besides these, cinchona trees have been distributed over the entire Indian Archipelago, and on the Islands of Sumatra and Celebes several small plantations are to be found.

The cinchona calisaya, var. microcarpa Weddel, and the cinchona officinalis are the varieties principally cultivated. The barks of the cultivated cinchonas are found on analysis to contain at least as large a quantity of the alkaloids as those of the same species from South America. Analysis has also shown that the cinchona calisaya, var. microcarpa of Weddel, surpasses all other species in the average yield of quinia. Since 1873, when this bark was first recognized among the calisayas of the Java plantations, the cultivation of all other calisayas excepting it and the *C. officinalis* has been abandoned. All the trees of the other species will be extirpated as soon as they yield a good crop of bark and the *C. calisaya*, var. microcarpa will take their place.

We are informed that the cinchona harvest is annually increasing, and that in 1875 it yielded a profit, which, it is confidently expected, will increase annually.

In the Russian department we find some very handsome surgical instruments, made by the Chirurgical Instrument Manufactory, War Department, St. Petersburg, a collection of urethrotomy instruments by Eberman of the same city, and an injector for embalming the dead, by Dr. Wywodzoff, of St. Petersburg.

For the proper preservation of bodies for anatomical or other purposes, Dr. Wywodzoff lays down the following requisites: 1st. That the body shall be preserved in a soft, flexible condition for at least three months; 2d. The tissues should not be changed in colour; 3d. The material used should be neither injurious to the health nor spoil the instruments employed in the operation; 4th. The material used must either be free from odour, or it must have an agreeable odour; 5th. The material must be cheap. These qualifications are possessed by thymol and salicylic acid. Thymol, when combined with animal tissue, preserves it from decay by retarding decomposition; it also possesses deodorant properties, and when taken internally is harmless. The cost of thymol is twelve times that of carbolic acid, but the very small quantity of thymol used to obtain the same effect, makes it a cheaper disinfectant or antiseptic.

Dr. Wywodzoff's researches on the preservation of subjects led him to the following conclusions:—

1st. Thymol, diluted with water and glycerine (R. Thymolis, \mathfrak{D} ij; glycerinae, lb. iv; aquæ, lb. ij), is the best preservative liquid which can be used for the injection of a whole body, as well as of separate organs. Like carbolic acid, it evaporates, which enables it to come in contact with the parts which begin to dry after the injection.

2d. Salicylic acid is also a good preservative, but only when it is in actual contact with all parts of the injected tissues.

3d. The quantity of the liquid used must be half the weight of the body.

4th. The success of the injection can be best obtained when the cavities are not opened, the viscera left in, and unnecessary incisions avoided.

5th. The complete injection of a body must be accomplished by slow filling of the bloodvessels; this can readily be done by Dr. Wywodzoff's injector, which is to be seen in the exhibition, but cannot be intelligently described without illustrations. Dr. Wywodzoff claims that the good results obtained are due to the slow filling of the bloodvessels which is insured by the use of this injector.

The results obtained by this process are certainly the best we have ever seen. In specimens, exhibited by Dr. Wywodzoff, several months after injection, the skin retained its original colour, and the muscles and joints were in their natural soft and flexible condition. The method is extremely well adapted for the preservation of subjects for dissection, and we would strongly recommend its trial to all who are engaged in teaching practical anatomy.

In the Austrian department Dr. Politzer exhibits a number of ear preparations which show at a glance the anatomical relations of the parts, and especially the position of the membrana tympani, ossicles, and labyrinth. The normal preparations show—1. The outer and inner surfaces of the membrana tympani with the ossicula auditûs; 2. The bony meatus entirely separated from the surrounding bones, showing the oblique position of the membrana tympani; 3. Vertical and horizontal sutures of the ear, showing the Eustachian tube, cochlea, and vestibule from various aspects; 4. The relation of the semicircular canals to the tympanum; 5. The position of the cochlea with relation to the tympanum; the cochlea being in some of the preparations laid open to show the lamina spiralis; 6. Various views of the different parts of the ear in connection. The pathological preparations are: 1. Calcareous deposits in the membrana tympani; 2. Double perforation of the membrane; 3. A very large perforation, the membrane being almost entirely destroyed; 4. Funnel-shaped growth of the membrana tympani to the inner wall of the tympanum (rare); 5. Separation of the handle of the malleus from the membrana tympani (rare); 6. Extensive calcareous and cicatricial degeneration of the membrane, and growth to the inner wall of the tympanum; 7. Adhesion of the membrana tympani to the inner wall of the tympanum in such a way as to close the tympanic opening of the Eustachian tube; 8. Destruction of the membrana tympani and growth of the lower end of the handle of the malleus with the promontory. Dr. Politzer also shows casts of anomalies in the arching and of solutions of continuity of the membrana tympani. It is unnecessary to call attention to the importance of a knowledge of the state of the membrana tympani with reference to diseases of the organ of hearing, and especially of the middle ear. Beginners meet with great difficulties in discerning changes in the convexity of the membrana tympani and certain forms of solution of continuity, and great assistance is afforded by the demonstration of well-marked pathological preparations. Besides the fact that many changes in the membrana tympani observed during life nearly or totally disappear after death, the small size of the object renders it difficult for the beginner to reconcile the state found after death with that observed during life. Dr. Politzer has, therefore, had

made a series of fifteen enlarged preparations in wax, showing perforations, calcareous deposits, cicatrices, adhesions, granular myringitis, the formation of vesicles, excessive vaulting inwards, etc.

We are happy to learn that these beautiful preparations have been purchased by the Mütter fund for the Pathological Museum of the College of Physicians of Philadelphia.

With the assistance of Dutch physicians especially, the study of medical science has been successfully carried on for more than twenty years at Nagasaki, Japan. In 1872 a medical college, under native direction, was established in Tokio, and has now over five hundred students attending its instruction. Under the stimulus thus given, Japanese artisans have exerted themselves to manufacture the various instruments used in medicine and surgery, and the results exhibited are very creditable to their skill.

From the Chinese medical exhibit, we regret to say, there is nothing useful to be learned. A study of the 756 specimens of their native drugs, vegetable and mineral, carries us back to the therapeutics of the middle ages. For instance, we are told that the common hedgehog's skin is decocted for pulmonary complaints, and is powdered and made into pills which are administered for cutaneous diseases; that a decoction of centipedes is used in gonorrhœa; and that dried human urine is given in pulmonary complaints, possesses demulcent properties, and taken internally is supposed to cure debility. Eggs boiled in boy's urine are also considered by the native physicians very strengthening. A multiplication of these examples would not, however, serve any useful purpose; enough has been said to show that the light of medical science has not yet penetrated the realms of the Celestial Empire.

I. M. H.

ART. XXXIII.—*Extract from the Ninth Annual Report of the State Board of Charities of the State of New York, relating to Hospitals for the Sick and Insane. . . . To which is appended a Report relating to the Management of the Insane in Great Britain.* By H. B. WILBUR, M.D.

THE "extract," here given, is simply introductory and commendatory to the report of Dr. Wilbur. We, therefore, pass directly to the latter.

After stating that his recent tour abroad was for the purpose of inspecting some of the British "asylums for idiots and the insane," and that letters of introduction were given him by certain gentlemen in authority with a request to report the results of his observations, Dr. Wilbur adds: "Having, myself, had the charge of a State institution for nearly twenty-five years, and having, in a former visit to Europe, seen something of the management of foreign institutions, I was not unfamiliar with the subject." As in the thirty pages of this essay there does not follow another word about the care of idiots, but, on the contrary, provision for the insane is the sole subject treated, we think the reader unacquainted with the facts, and connecting the above quotation with the subject-matter treated, will be a little surprised when we tell him that the Dr.'s twenty-five years of experience was not in hospitals for the insane, but in charge of institutions for idiots. We may be exceptionally dull, but we wholly fail to see how service in this latter line—honourable and every way commendable as it undoubtedly has been—can have possibly given to the writer any eminent ability to criticise and compare the insane hospitals of his own and other lands. Yet he speaks as one having authority, and is not by undue modesty prevented

from asserting his own private opinion, when, as generally happens, it is opposed to the almost unanimous views of the men really constituting the alienistic specialty in this country.

One point of difference between British and American hospitals, noted by Dr. Wilbur, is the larger proportion of patients regularly working, in the former as compared to the latter. That there is such difference, we have no doubt, though its degree has perhaps been exaggerated. To discuss the subject of employment of the insane would require much more space than we propose now to use. In passing, however, we may mention that no superintendent of American hospitals is at variance with his British brethren as to the great value of labour, as a curative and a palliative, in insanity. The assumption that British patients are quieter than American because they work, rather than that they work because they are quieter, at least lacks proof. Attempts to compel labour have not seemed expedient to American superintendents. Every one knows, too, that there exists among our hand-workers an exaggerated spirit of independence, and an invincible aversion to work not amply required. The same feelings are imbibed by foreign workmen almost as soon as they touch our shores. Although founded in that noble self-respect which cannot be too much admired, the operation of these sentiments within the wards of a hospital is unfortunate. We believe there is no hospital superintendent in America who does not ardently desire and encourage the general employment of his patients. We hope, however, that our asylum authorities will never assent to the idea recently suggested that they "try to be too safe." We should not envy, for instance, the feelings of a superintendent called to account by a wife, for the death of her husband at the hands of a maniac whom the doctor had provided with an axe or a shoe-knife. We fear no explanation of the benefits of labour would be accepted as sufficient excuse.

Dr. Wilbur fully accepts the views and claims of the extreme "non-restraint" and "personal liberty" party of the British alienists. He speaks approvingly of unguarded windows and unlocked doors; and thinks a few suicides preferable to incessant watching and repression. He finds the Lunacy Board an excellent institution and commends it to American imitation. In short, either by direct statement or by implication, every feature of British management is admirable and superior, everything American bad and inferior.

Without stopping to inquire what reasons, if any, the writer may have for disparaging American management of the insane, we take the liberty of saying that there is among British alienists no such unanimity as he implies, regarding non-restraint, no such blind admiration of their own methods and results, and contempt of American, as he seems to feel. We might add, that the proceedings of the Lunacy Board are often felt, by British superintendents, to be impertinent interference with matters beyond its comprehension. A few extracts and abstracts will show the truth of our statements.

In the *Edinburgh Medical Journal* for December, 1870, is an article entitled "American Hospitals for the Insane, compared with those of Britain." The writer is Dr. W. Lauder Lindsay, F.R.S.E., physician to the Murray Royal Institution (for the insane), Perth. Among the hospitals which he visited were those at Bloomingdale, Flatbush, and Utica, representing corporate, county, and State management. After stating that he came to learn, and to discover whatever excellences might exist, rather than to confirm previous opinions, or to find fault, he says:—

"It must be confessed, that, among alienists in this country, there prevails an amazing kind and degree of ignorance regarding, and prejudice against, American asylums, and everything connected with lunacy affairs in the United

States. The feeling or belief is common at home that, as regards the managements of lunatics and of lunatic asylums, we have nothing to learn from America." Again, "So far from its being the case that we have nothing to learn from the Americans in the treatment of our insane, I will, I think, have no difficulty in showing that, in not a few important respects, they are decidedly (to use one of their own characteristic expressions) 'ahead.'"

Further, after saying that in some particulars American asylums are behind the British, but that he does not design to speak of these, nor of the points in which the two are equally good, he adds:—

"In truth, the less we say of the errors of our cousins (*quoad* the management of their insane) the better for our own reputation for common sense; for the faults of other countries in this respect have arisen too frequently from an excessive confidence in the excellence of the asylums and asylum-system of England, and from too blind a following of her unfortunate example!"

We should like to italicize some of the latter words in this quotation, but will entrust that duty to Dr. Wilbur and our readers.

To sustain his general proposition, Dr. Lindsay enumerates twelve different classes of excellences of adaptation to their work—each heading comprising from one to twenty specified particulars—in which he finds American asylums "stand in favourable contrast to those of Britain;" and "in respect of the non-possession of which the English asylums, and England itself, fall short of that perfection of which they are so much given to boast!" Our readers will please remember that Dr. Lindsay is not the head of an institution for the idiotic, or the deaf and dumb, but for many years practically engaged in the care of the insane. So, possibly, his individual good opinion may fairly balance Dr. Wilbur's condemnation. At all events, we will leave the question of general excellence, and pass to the matter of "non-restraint."

Neither the British Lunacy Commissions, nor Dr. Wilbur, will deny that it is the ability to exercise a certain kind and degree of restraint that gives the hospital a portion of its advantage over the patient's home. Restraint, in most cases, is needed; and so far as the hospital fails to provide it, it fails of its proper functions. So far as moral agencies are effective, certainly they should be preferred. When these fail physical means must be employed. Why, or how, the muscular power of attendants is more curative than the passive force of a sheet, camisole, or bed-straps, we leave to the admirers of the former method. We wish only to show that there are eminent men in the specialty, in Great Britain, who see this matter as we see it; and we would direct attention also to the influences tending to repress freedom of thought and action concerning this subject.

First, we may remind our reader that the late Dr. Forbes Winslow, one of the most eminent alienists of this century, and editor of the *Journal of Psychological Medicine*, repeatedly recorded his dissent from the views lately popular, and his approval of mild restraint in certain cases.

The *British Medical Times and Gazette* for Sept. 26, 1868, quotes with approbation utterances of Dr. Yellowlees, of the Glamorgan, and Dr. Murray Lindsay, of the Derby, Asylums, advocating the occasional use of mechanical restraint; and plainly says that "non-restraint" is often carried to an absurd excess. There are cases, it adds, where restraint is the best possible treatment. It queries whether keeping a man black and blue from constant handling, or stupid with drugs, or debilitated with wet sheets or warm baths, is proper treatment. Confinement by means of a sheet fastened about the body, is thought to be less injurious than holding the patient. Intelligent supervision is mentioned as the grand desideratum, "not inconsistent with a certain amount

of judicious restraint." The same editorial speaks of certain physicians having the "courage to speak out" against the bigotry of non-restraint.

In March, 1869, the same journal commends the paper then just published by Dr. A. O. Kellogg, in the *American Journal of Insanity*, and comments on its "opening men's eyes to the folly of pursuing the non-restraint system to its extreme limits." Similar views are again expressed in editorial remarks in Feb. 1870.

In 1873, Dr. Batty Tuke, of "Fife and Kinross Asylum," says he is convinced that mechanical restraint is much less "irritating and dangerous" than that exercised by hands. Such restraint, and often seclusion, for the patient's good or the common weal, he advocates very strongly.

Dr. Thos. Lawes Rogers, of the Lancashire Asylum, in an address as President of the Medico-Psychological Association, published in the *Journal of Mental Science*, October, 1874, deprecates intolerance on the part of non-restraint partisans; and even admits that gloves, fastened on, may be used with advantage. He would, however, *avoid the use of the word "restraint."*

In October, 1873, Dr. Sheppard, of Colney Hatch, vigorously defended his use of restraining apparatus against the censures of the Lunacy Commissioners. Dr. Yellowlees, of Glamorgan, had occasion to do likewise.

In the *Journal of Psychological Medicine* for Oct. 1875, Dr. J. G. Davey, formerly of Hanwell, and Colney Hatch, in a paper entitled "Reminiscences of Lunacy Practice," says:—

"The right use of both seclusion and mechanical restraint has been and is now somewhat neglected, and this with the sad and humiliating effect of aggravating disease and of adding not a little to the difficulties and dangers of asylum management. The total disuse of seclusion, and not less the entire abandonment of restraint, though advocated by one or more medical men engaged in asylum practice, is, as it appears to me, not only absurd, but sometimes mischievous. . . . Many a superintendent has, it is to be feared, been ere now deterred from the employment of seclusion and restraint, when one or the other was urgently needed." "The doubtful surveillance of attendants," is mentioned as a poor substitute. Some cases, he says, are aggravated by the constant presence of an attendant.

A case described by Dr. Davey well illustrates a peculiar class, and shows the height of absurdity to which the dominant sentiment has carried the glittering generality of non-restraint. In spite of watchful relays of attendants, a poor demented lady would occasionally fall out of her chair. To avoid the sad bruises thus produced, and give intervals of relief to attendants, the doctor directed a shawl to be bound around both chair and patient for short periods each day. It will hardly be believed, but he was soundly rated by a Judge of Quarter Sessions, and called "guilty of a mean and inhuman economy," "at the cost of a patient's well-doing." So the poor woman was set free to tumble about in the enjoyment of non-restraint, and only the doctor was morally or immorally restrained. In this connection, Dr. Davey quotes an editorial of the *Journal of the British Medical Association*, in which occur these words, ". . . of late years, in Great Britain there has been a steady and powerful reaction against the extreme views of the non-restraint men;" and these views are described as "only fit for *doctrinaires* who do not understand the real exigencies of asylum management." [Such as Lunacy Commissioners and a recent American visitor, we suppose.]

As to two suicides occurring under his own notice, Dr. Davey does not hesitate to speak of them as "sacrificed to the non-restraint system." Two attendants were assigned to each patient, with strictest orders never to lose sight of

their charge. Yet in those moments of relaxed vigilance which will occur, both patients succeeded in hanging themselves. Simple apparatus would have rendered suicide impossible in the time afforded them.

The current number of the *Journal of Psychological Medicine* contains a paper, by Dr. Murchison, assistant at the Dumfries Institution, on Mechanical Restraint for the Insane. He says the blind prejudice against its use is diminishing in England. Some cases within his experience, of terrible self-mutilation, lead him to "question the propriety of the total abolition of mechanical restraint," and to advocate its use in such cases as he has described. May he escape the fate of Dr. Davey, or a worse one! It needs some courage to express, even thus guardedly, views opposed to the Commissioners' dicta.

Dr. Murchison also adverts to the practical unattainableness of perfect watching; and says, that "mechanical contrivances" will be less hurtful to a patient than the alternately lax and harsh constraint of human hands, exerted by "strong and certainly not passionless" attendants. It is his firm conviction, that the great majority of the accidents, and many of the suicides, in British asylums, are due to the disuse of restraint.

In 1869, Dr. A. O. Kellogg, of Utica Asylum, N. Y., visited a number of British asylums. He asserts, plainly, that the innocent restraints forbidden by a false public opinion, and the Lunacy Commissions, are replaced by powerful narcotics, antimonials, "refractory baths" (a sort of wet pillory which he saw in use), protracted seclusion, and other treatment infinitely more injurious than mechanical restraint. Unlike Dr. Wilbur, he did not admire this feature of British management.

Let us now consider for a moment whether the Lunacy Commissions are as excellent things as the writer believes them to be.

Dr. Lauder Lindsay, says, "The terrorism which is in England exerted on asylum authorities by the bugbear of public opinion, the anathemas of the fourth estate, and the censorship of the Board of Lunacy, is a very real one." Even among themselves, he says, they speak with "bated breath." One writing to him says, "I quite agree with your remarks about the *terrorism* that the Lunacy Commissioners exercise." Another says, that, "one can scarcely be too much of a *coward*, if he would avoid imputations" as ridiculous as groundless. These passages occur in connection with an article on rib-fracture among the insane, in the *Edin. Med. Journ.* for Nov. 1870. False public opinion, as formed and expressed by the Boards, Dr. Lindsay holds largely responsible for these distressing cases, resulting from personal struggles which would not have occurred had mechanical restraint been permitted.

In the paper before noted, Dr. Kellogg refers, in terms of regret and sympathy, to the humiliating position in which asylum superintendents are placed, by the forced abandonment of their own judgments, at the dictation of Commissioners, on whose breath depends position, and professional status before the public. "Medical authority is not supreme here," was the significant reply of a subordinate officer, when asked if certain cases could not be better managed by simple apparatus.

We had designed saying something about the views here expressed as to the practicability and expediency of caring for the American insane, at charges, both for buildings and maintenance, approaching those incurred for the pauper insane of Great Britain. Space remains, however, for a few words only. That in our country, with our people, fit and proper curative hospitals can be located, constructed and equipped, for much less than the average cost of our State hospitals, we have seen no reason to believe. That proper care, cloth-

ing, and diet, to secure comfort and promote cure, can here be provided at the English rate, or say \$3 per week, we doubt. By massing together very large numbers of incurable paupers, both lines of expenses can undoubtedly be much reduced, at least apparently, and at the outset. Whether such separation and aggregation, with its cheaper maintenance, be, on the whole, desirable, or even pecuniarily economical, may be uncertain. We hope the day may be far distant in which Americans shall begrudge any expense necessary to place their insane in conditions fitted to promote cure, or render prolonged life decent and comfortable.

If we have seemed to dwell at disproportionate length upon the "non-restraint" matter, it is because the supposed superiority of this treatment, and the alleged unanimity of British physicians in its favour, has been asserted with somewhat offensive urgency of late, not only by native mal-contents, but by a distinguished English visitor. We trust enough has been said to exhibit the true character and standing of the "non-restraint" craze, and to show that, in this matter at least, we need not disparage our own institutions.

B. L. R.

Note.—Since finishing the above notice, we have received the Report of the Borough Asylum for the Insane, at Newcastle on Tyne, for 1875. Superintendent R. H. B. Wickham, F.R.C.S. Ed., apologizes for the number of days of "seclusion" recorded. This treatment was especially used upon three patients of violent and murderous propensities. "How the cause of humanity, science, or anything else good is promoted by allowing such persons to be at large, even in asylum wards," he is quite at a loss to see. Something is due, he adds, to the feelings of quiet and orderly patients, who, with the officers, dread and fear these desperate men. Violent assaults, he thinks, should be prevented, and not merely apologized for. Yet, he says, that "in deference to" the "very strongly expressed wishes" of the Commissioners, he has since their visit "almost entirely relinquished the use of seclusion." A pair of wristlets upon each of these men would have probably enabled them, under proper watching, to enjoy the range of ward and yard among their fellows, and have saved the latter from assaults. Not daring to use these simple appliances, the superintendent did his duty to the innocent and harmless patients by shutting up the violent. And the Lunacy Board, which tolerates no restraint, forced him to turn them loose again! No thanks to the Board, but luckily for the Dr. and his patients, two of these dangerous men have been removed, and one has passed into a quieter stage of his disease. No better exhibition of the evils of non-restraint, the subservient position of superintendents, and the unintelligent supremacy of the Commissioners, can be desired. And this is the state of things held up for American admiration and imitation!

ART. XXXIV.—*A Sketch of the Life and Writings of Louyse Bourgeois, Midwife to Marie de Medici, the Queen of Henry IV., of France.* The Annual Address of the retiring President before the Philadelphia County Medical Society. By WILLIAM GOODELL, A.M., M.D. Delivered June 5, 1876. Published by order of the Society. 8vo. pp. 52.

ALTHOUGH a rather singular subject for a retiring presidential address before a body not specially devoted to obstetrical study, this review of the life of one of the last of the race of midwives who in ignorance and superstition held for many centuries an entire monopoly of their art, and literally dwelt in kings' houses when the births of princes and princesses were to be attended to, is of much historical interest, as the story is interwoven with many of the doings of the French Court, especially in relation to the births of the children of the quondam Princess of Tuscany, now become the haughty and jealous queen of the dissolute Henry of Navarre.

Although from the earliest ages of the world, down to the 17th century, women held an almost absolute control of obstetric practice in all countries, it was not until 1608, in France, and 1671, in England, under Madame Bourgeois and Mrs. Jane Sharp, that any one of them ventured to publish their acquired knowledge for the benefit of humanity. It is also singular that the century of their literary labours was also the commencement of their downfall, under the advances made through the inventive genius of Peter Chamberlen, and the mental labours of Harvey, Willughby, and others, who, substituting superior skill and judgment for ignorance and necromancy, turned the tide against them in spite of sexual antipathy, prejudice, and bitter invective, by exhibiting their more successful handling and treatment of cases, as compared with the said quondam monopolists.

We cannot, with Dr. Goodell, see much to admire in Madame Bourgeois, except it be her coolness of bearing; which can only be attributed to an exalted opinion of her own abilities, based upon a lamentable ignorance of the imperfection of her knowledge. She did, it is true, possess a certain degree of skill, but the medical treatment of her cases was about as senseless as that of the Chinese at the present day. We are glad that the "Royal Midwife" no longer parades her ignorant quackery in the palaces of kings. As an interesting historical paper in the peculiar style of its author, the searcher after the past in obstetrical science, will find in it much that is entertaining.

R. P. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Vaso-motor Centres in the Cord*.—N. BOTHLING agrees with Goltz that there are vaso-motor centres in the spinal cord, which may act on the vessels after cutting the cord, and which may be paralyzed by narcotics such as chloral hydrate. His results differ, however, from those of Goltz in respect to the vaso-motor fibres in the sciatic. Irritation of this nerve, the present author always found to contract the vessels, lowering the temperature, whereas Goltz obtained the opposite effect. The author suggests that there may be inhibitory fibres in the sciatic, which cause dilatation of the vessels, and that Goltz may have irritated them, while his mode of experimentation did not. Stricker adds in a note that he has, since the above paper was written, actually proved the existence of such depressor fibres, which he will describe in a future paper.—*Glasgow Medical Journal*, July, from *Stricker's Jahrbücher*, Pts. i. and ii. 1876.

2. *The Relations of the Serous Channels to the Bloodvessels*.—Dr. P. FOA, Montava, has published the result of experiments on the frog, and is of interest as confirming some former views, and as rendering still more certain the intimate relation of the serous spaces with the bloodvessels on the one hand and the lymphatics on the other. In the first series of experiments the observations of Arnold are confirmed, in respect that after the vessels have been altered by a venous congestion, an injection-material thrown into the arteries penetrates from these vessels to the serous channels. But this author goes further, he finds that without any previous disturbance of the circulation he can inject the serous channels from the bloodvessels, if before the colouring matter a solution of phosphate of soda has been thrown into the vessels. With the living animal, however, his results are even more convincing, for he was able to inject the serous spaces without any previous washing out of the vessels with phosphate of soda. Under ordinary circumstances considerable pressure was needed to effect this; but if curare had been previously administered, it was much easier. The probability is that the injection in the former case irritates the vessels, and, causing them to contract, opposes a great obstacle to further injection. When curare is given, the vessels are relaxed. The author has some further observations on the path by which the colouring matter passes from the vessels to the serous spaces. After injecting vermilion or China ink, he washed out the vessels, and then found that the pigment marked out the borders of the endothelial cells, just like nitrate of silver; that in fact the solid granules of pigment were stuck in the cement between these cells. This seems to show that the pigment passed out through the cement

substance, which must be a semi-fluid substance with interstices in it. Some further experiments seemed to show that in the neighbourhood of inflamed parts the vessel wall is more permeable than normal. The author's injections were more successful in filling the serous spaces in such situations.—*Glasgow Medical Journal*, July, from *Virchow's Archiv*, Pt. iii. Dec. 1875.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Salicine as an Antipyretic*.—Prof. SENATOR states that salicine administered in doses of two and a half to six grammes lowers the temperature in some febrile diseases just as certainly as salicylic acid does. He has used it in typhoid fever, phthisis, and parametritis. Dr. MacLagan has shown that salicine has the same specific action in acute rheumatism as salicylic acid, into which, according to the researches of Ranke, Lehmann, and others, it is converted in the blood. Salicine is less unpleasant to take than salicylic acid. It can be given in powder mixed with sugar, or, better, in the form of pills. Its price is somewhat less than that of the acid and its salts, and no doubt, if the demand for it increases, it will be still cheaper, for it can be procured in abundance from poplars and willows. Salicylate of ammonia is recommended by Dr. Martenson, of St. Petersburg, as a substitute for salicylic acid. It is easily prepared by saturating an aqueous emulsion of the latter with ammonia or carbonate of ammonia. It is easily soluble in water and alcohol, has a sweet taste, and contains nearly 89 per cent. of acid.—*Med. Times and Gaz.*, July 29, from *Centralblatt Med. Wiss.*, No. 14, 1876.

4. *Physiological Action of Condurango*.—Dr. T. LAUDER BRUNTON has published in our excellent cotemporary, the *Journal of Anatomy and Physiology* (April, 1876), a number of experiments instituted by him to determine the physiological action of condurango. "The general result of all these experiments is that condurango is physiologically inert."

5. *Action of Salicylic Acid in Diphtheria*.—L. LETZERICH states that diphtheritic organisms (fungi obtained from the urine of children suffering severely from diphtheria, and consisting of bacteria, masses of protoplasm and micrococci) placed in a closed vessel with solution of salicylic acid containing 0.35 of the acid, one part of spirit and 59 of water, when examined after an interval of five months, were all found lying dead at the bottom of the vessel. A few drops of weak solution of salicylic acid (of about one-third the above strength) brought into contact with diphtheritic organisms arrested the movements of the bacteria present gradually; stronger solutions arrested them suddenly. The plasma corpuscles lost their brilliancy and acquired a double outline, as if they were surrounded by an extremely delicate membrane; the substance of the protoplasm appeared to contain bubbles of air. Letzerich treated seven cases of diphtheritis with gargles of salicylic acid, and all of them successfully. In two other instances powdering the surface with a little dry salicylic acid proved very effective. From these and other observations and experiments he believes that salicylic acid is a powerful anti-diphtheritic agent.—*Practitioner*, Aug., from *Centralblatt für die Chirurgie*, No. 3, 1876.

6. *Bromohydric Acid*.—Dr. J. MILNER FOTHERGILL states that this acid can be obtained by dissolving 3x, 3vj. gr. xxvij of bromide of potassium in four pints of water, then add 3xij, 3j, gr. xxxvij of tartaric acid. The bitartrate of potash is precipitated, and the hydrobromic acid remains in a clear bright, almost colourless fluid, possessing an acid taste and the ordinary acid properties, as well as the peculiar properties of bromide of potassium, as compared with any other salt of potash.

After a year's experience with the drug Dr. F. says "it certainly does prevent the occurrence of headache, after each dose of quinine, in those who before had to desist from taking quinine for that reason. It is, perhaps, not invariably successful, but its power is very marked. It also prevents the fulness felt in the head by some persons, especially those labouring under cerebral anæmia, after doses of iron. It is also useful in nervous conditions, and, with quinine, is excellent in those cases where there is much nervous exhaustion from excessive indulgence in tea or in alcohol; this being tried in a case of nervous excitability and sleeplessness, where there had been much resort to chloralhydrate.

In forms of excited action of the heart, connected with general nervous excitability or nervous exhaustion, hydrobromic acid is most useful. Given with quinine (of which it is a capital solvent) and digitalis, it gives better results than the bromide of potassium and digitalis; this is a favourite combination with me at both my hospitals, and is agreeable as well as effective. In all hysterical conditions connected with ovarian excitement, it seems to have all the properties of the bromide of potassium. It is equally useful in the vomiting of pregnancy, and seems to exercise quite as powerful an influence over acts of reflex origin as does the bromide. It is especially adapted for the relief of menorrhagia associated with sexual excitement, and is even more effective here than the bromides themselves. It is also of use in whooping-cough, and combines conveniently with quinine, forming an effective measure in this troublesome affection. With spirit of chloroform and syrup of squills, it forms a most agreeable and palatable cough mixture of no mean potency. It is also of use in case of cough of reflex origin. Where there is gastric irritability, it is the most useful of all acids, possessing the usual properties of acids generally and of the bromine as well.

The dose of the acid, prepared as above, is one drachm as a full dose. Half a drachm is the dose I ordinarily employ. Bromohydric acid has the further advantage of not producing the troublesome eruption so often the result of doses of the bromide of potassium, at least so far as my experience has yet extended. There are many qualities about this acid to render it a useful member in our therapeutical *armamentarium*.—*Brit. Med. Journ.*, July 8, 1876.

7. *Antagonism between Morphia and Atropia.*—Dr. CORONA describes some experiments which he has made on dogs, rabbits, and frogs, with regard to the antagonistic action of morphia and atropia. The following are the conclusions at which he has arrived:—

a. Atropia quickens respiration in an extraordinary manner; morphia, on the other hand, retards it greatly, and modifies it, the inspirations becoming large and deep, and the expirations slower.

b. Morphia produces sleep and deep coma; atropine, on the contrary, produces severe convulsions, but never sleep, in dogs and rabbits.

c. Morphia quickens the movements of the heart; atropia renders them slow.

d. While morphia accelerates the heart's action, the temperature (generally taken in the rectum) falls; atropia, on the other hand, diminishes the heart's action, while the temperature remains stationary or is slightly increased.

e. In the action of atropia, the dilatation of the pupils is the most marked symptom, as sleep is in the case of morphia; with morphia, on the other hand, the pupil is sometimes dilated, sometimes stationary, sometimes contracted. Dr. Corona finds, 1. that dilatation of the pupil occurs in animals principally when the dose of atropine introduced into the blood is relatively mild; 2. that, when the dose of atropine injected into the circulation is large, dilatation does not occur, because both the circular and radiating fibres of the iris are paralyzed; 3. that dilatation of the pupil is produced by the injection into the eye of a solution containing a very small fraction of a milligramme of atropia; 4. that the dilatation of the pupil constantly occurs, even when a large quantity of atropia is injected gradually, the other symptoms of poisoning being sudden, in consequence of the rapid elimination of a large portion of the poison.

f. Morphia never produces vaso-motor paralysis; atropia always does, as is clearly shown by observing the ears of rabbits poisoned with it. As regards

this: 1. The congested vessels of the ear constantly return to the normal state under the influence of galvanization of the cervical sympathetic, in rabbits previously poisoned with atropia, and in which the vaso-motor paralysis is at the maximum. 2. During the galvanization of the sympathetic, the constriction of the vessels is followed by a diminution of temperature, corresponding to the increase attending the vaso-motor paralysis of the ear. 3. In rabbits, 20 centigrammes (0.3 grain) of neutral sulphate of atropia are required on an average to produce vaso-motor paralysis, and the injection must be made at one time; otherwise as much as 70 centigrammes (little more than a grain) may be used without producing this phenomenon, if it be injected in doses of 10 centigrammes at intervals of five minutes.

g. Morphia, while it constantly produces sleep, leaves reflex action intact, and sometimes exalts it; atropia depresses reflex action, and always produces paralysis of the posterior part of the body in animals.

As regards necroscopic results, the following conditions were always observed.

h. The lungs, liver, and spleen, were normal in both cases. The heart and large vessels were always full of blood; but this was coagulated in poisoning by morphia, fluid and blackish in poisoning by atropia. The meninges in both cases were always congested, while the brain-substance was constantly found to be anæmic. The medulla oblongata and the tubercula quadrigemina were never found hyperæmic, while the meninges covering them were so.

i. As regards the toxic dose, there was very great variation both in regard to the age and race of the animal. In rabbits, morphia was sometimes fatal in doses of 20 centigrammes (0.3 grain); whilst sometimes as much as 50 centigrammes (0.75 grain) was borne. Sleep and slowness of respiration were, however, constant results even of very small doses. In dogs, the toxic dose was much less. Atropia was tolerated in very large doses; in rabbits as much as one gramme (15 grains). It was, in many cases, fatal in doses of 50 centigrammes; never in less, except in young and very small animals. Large doses of atropia were tolerated on the first two days, but the animal did not survive the third. Even with small doses, the remarkable quickening of the respiration, the dilatation of the pupils, and the vaso-motor paralysis, were observed.

Experiments made on the pneumogastric nerves during the poisoning, whether by morphia or by atropia, showed that the antagonistic respiratory changes always proceeded from the centres of respiration.

k. Finally, with regard to the result of experiments on the alleged antagonism of atropia and morphia, Dr. Corona makes the following remarks: 1. Morphia was always capable, even in very small doses, of removing the symptoms produced by atropia, and of producing sleep. 2. During morphia sleep, very large doses of atropia did not in the least alter the symptoms due to morphia, nor was the sleep ever found to cease. 3. When atropia was injected in small doses at intervals of ten minutes, although the total quantity was large, its action was more rapidly extinguished by small doses of morphia, than when atropia was injected in a dose of not less than 20 centigrammes. 4. The injection of the two poisons into the veins showed that a much smaller dose was sufficient to produce rapid and grave poisoning; but even then the morphia produced its action instantaneously, and its symptoms always superseded those of atropia. 5. The injection into the veins of large doses of atropia and very small doses of morphia was always followed by sleep, and the manifestation of the symptoms due to atropia was tardy. 6. In all cases, after the disappearance of the symptoms due to morphia, those due to atropia appeared, in intensity proportionate to the largeness of the dose administered for the purpose of counteracting the symptoms due to morphia.

From these results, Dr. Corona concludes that a partial physiological antagonism may be recognized, but that the idea of a mutual therapeutic antagonism cannot be accepted.

He recommends in poisoning by atropia the injection of morphia and its salts, both into the veins and by the hypodermic method, but altogether disproves of the idea of combating morphia poisoning with atropia, both because very large doses of the latter are incapable of removing the symptoms produced

by morphia, and because, even if the latter are temporarily relieved, the still more deadly symptoms due to atropia supervene.—*Lond. Med. Rec.*, Aug. 1876, from *Giornale di Medicina Militaire*, April and May, 1876.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

8. *Treatment of Angina Pectoris*.—According to Prof. SÉE, this affection is not a neurosis but an ischæmia combined with pain. The treatment should therefore be twofold. As the pain, which by its violence stops the breathing, can kill the patient in a few minutes, it is to it that we must first address ourselves when called during an attack; and we must not trust to ordinary means, which would probably act too slowly: we must immediately administer a hypodermic injection of one to two centigrammes (0.15 to 0.3 grain) of morphia. This injection, moreover, should be repeated one to three times a day, and continued at least twice in the twenty-four hours, for some weeks, until the attack has completely disappeared. Without this we shall see it reappear, and shall lose all the benefit of the remedy.

With respect to the ischæmia which we are about to mention. The morphia acts not only by suppressing the pain; it assists the circulation also, and thus directly addresses itself to the ischæmia, which, stopping the heart from receiving sufficient blood, it causes to lessen. Together with these morphia injections, we ought to give chloral enemata. By the mouth this remedy will not be borne in these cases, and it seems besides to be more easily absorbed by the rectum. This is the formula of M. Sée: R chloral 2 to 3 grammes; mucilage, q. s.; water, 150 grammes. Make an enema. Chloroform should be completely banished from the treatment of angina pectoris, because it favors arrest of the heart. Nitrite of amyl has no action as a sedative, but it may perhaps be useful, because it dilates the vessels. Belladonna produces no effect; and as for antispasmodics, they are absurd in a case so serious and urgent. Acetate of ammonia has a certain value as an excitant of the circulation, and because it acts at the same time on the respiration; but it is not so valuable as the morphia. External measures, as cupping, heat, frictions, etc., have no value; nevertheless, we are sometimes obliged to use them in deference to prejudice. To prevent a return of the attack, we must have recourse to bromide of potassium or digitalis. During the attack the use of bromide would be absurd, because it contracts the vessels instead of dilating them; besides, its action would be too slow; but in the interval it serves, like digitalis, as a regulator of the circulation and the respiration. Arsenic, much vaunted, does no good. Hydrotherapy is highly dangerous, and its employment can only be explained on the idea that we had a neurosis to deal with. With this method of treatment, either a return of the attack or cerebral congestion is to be feared.—*Lond. Med. Record*, July 15, 1876.

9. *Sunstroke treated by Quinia; Recovery*.—A case of this is reported by Dr. DRAKE (*Canada Med. and Surg. Journ.*, Sept. 1876). The patient, a man æt. about 45, was found by the police, on the afternoon of July 13th, lying on his back insensible, in an open place near the wharves, quite unsheltered from the intense rays of the sun, and brought to the Montreal General Hospital at half-past 5 o'clock. "On admission" he was insensible, skin hot and dry, face dusky, pupils contracted, conjunctiva injected, tongue dry and parched, respiration shallow, pulse feeble and thin, almost imperceptible and quite impossible to count, secretion completely arrested; temperature 107.8°.

Seeing the necessity for prompt action, I at once applied an ice-bag to the head, and, on account of the excessively high temperature, gave him 30 grains of quinine in three doses at intervals of half an hour. Two hours after the first dose was administered, the skin became moist and was soon covered with profuse

perspiration; four hours after the first dose, urine and liquid feces were passed freely in bed, and the urine continued to pass away in large quantity during the night. Six hours after the administration of the quinine the temperature had fallen to 103° , pulse 112, and fourteen hours after to 100.4° , pulse 90. Dr. Drake saw him the following day, and ordered quin., gr. v, to be given every four hours; four such doses were given, when he was allowed to get up. All bad symptoms disappeared, and he was discharged from hospital on the morning of July 17, having been under treatment for three days and a half, and having taken altogether fifty grains of quinine in divided doses.

The quinine was administered by the mouth in the form of 10 grain cachets; if it had been impossible to give the quinine in this manner, it would have been administered hypodermically.

Accompanying this report is a chart showing the rapid fall of the temperature under the quinia treatment.

10. *Tapping the Chest of a Child three years of Age.*—Dr. GRIFFITH records (*Lancet*, August 19) the case of a boy three years of age, in which he removed from the left pleura, by a Dieulafoy's aspirator, 121 ounces of pus in five successiveappings, with satisfactory results.

11. *The Cold Bath in Cholera Infantum.*—Dr. VOCKE, of Berlin, read a paper on this subject before the German Association at Gratz, since published in the *Oesterr. Jahrbuch f. Pädiatrik*, 1875.

Children, he says, who are otherwise healthy, become the subjects of severe summer diarrhœa, that has hitherto resisted treatment. The means of treatment may indeed be educed from a consideration of the effects of the high temperature in producing it; for just as young plants faded by the prevalence of heat may be revived by watering them, so may the infant by repeated cold washing and bathing be enabled to resist the effects of disease so caused. In the summer of last year, Dr. Vocke submitted almost all his cases to the cold bath, with most remarkable success. Some of these—healthy children, the subjects of diarrhœa or cholera, having the cholera aspect, and presenting not the slightest hope of recovery—seemed the next day as if born anew. Sometimes the temperature was raised to 40° C. (104° F.), the pulse being scarcely perceptible and the child excessively restless. Any sleep procured by opiates was unrefreshing, and the child got worse and worse. On three or four cold baths being given, good sleep was obtained after each, the child being more lively, changing its fixed dull stare for the seeking glance, taking food, and having fewer and better stools. It is not meant to be asserted that these good effects were exclusively due to the baths, for other remedies were employed conjointly; and when the seat of the disease seemed located low down the rectum, small enemata of nitrate of silver with a few drops of tincture of nux vomica were ordered—a means of well-known efficacy in sporadic diarrhœa at other periods of life. The cold baths operate by relieving the state of exhaustion into which the child has fallen in consequence of the heat, and restore it to a viable condition, similar to that in which grown-up persons and children in winter find themselves if they become accidentally the subjects of diarrhœa—pharmaceutical substances now again becoming of utility as in winter.

In this affection the infant should not be covered up as in winter, but only lightly so, the cradle being placed in an airy part of the dwelling, though out of a draught; and the windows thrown widely open, not only for the purpose of ventilation and cooling, but also to admit a purer air than is found in the sick-chamber. Caution must also be observed with respect to the baths themselves, on account of the fear entertained by most mothers of cold baths—which sometimes have acted mischievously. In some cases, therefore, it will be well to commence by making cold applications first to the head, and then to the belly—a measure which has often prolonged the child's life. The mother, witnessing the effect of these, will then consent to put the child into a bath of 26° (78° Fahr.), and next day of 24° (75° Fahr.); and a temperature lower than 22° (71° Fahr.) is of no advantage, and may prove dangerous. The bath should be repeated three times in twenty-four hours. Dr. Vocke has not kept notes

of the cases he has treated so satisfactorily by this means, but they cannot be less than a hundred, and the cures were durable.—*Med. Times and Gaz.*, July 22, 1876.

12. *Treatment of Boils and Carbuncles.*—Dr. PETER EADE, in an article in the *Brit. Med. Journ.* for July 1, 1876, maintains the following doctrines in regard to these affections:—

1. That boils and carbuncles are not mere inflammations and sloughings of cellular tissue, but specific diseases.

2. That they are parasitic, and, as such, endowed with a definite life and history.

3. That, in their early stages, they may be infallibly destroyed and aborted by destruction of their central stem or root; and that even after this stage has passed, they may generally be destroyed, and in all cases, at the very least, greatly modified, by the free application of carbolic acid.

4. That, to produce this result, the acid must be freely introduced into the central portion of the disease, and also into any other part where an opening exists or is formed artificially.

The essentials for the proper action of the carbolic acid, Dr. E. conceives to be:—

1. The acid must be applied in *strong* solution (four or five parts of acid to one of glycerine is the strength I employ).

2. It must be brought into contact with the diseased tissue, for it appears to exert no influence on or through the unbroken skin. To this end, if sufficient opening do not exist when the case is first seen, a proper one must be fearlessly made in the very centre of the disease by some appropriate caustic, and, perhaps, the acid nitrate of mercury effects this better and with less discomfort than any other.

3. The acid solution must be occasionally reapplied to, and into, the hole thus formed, or those already existing, and I have found it a good plan to keep a piece of lint wet with a weaker solution constantly over the sore.

13. *Report of the Special Committee appointed by the Medical Society of Victoria to investigate the Subject of "Intra-venous Injection of Ammonia in Cases of Snake Poisoning, and to take into consideration the Report of the Indian Commission."*—The number of the *Australian Medical Journal* for April last contains the report of this committee, which by no means sustains the claims of Dr. HALFORD as to the efficacy of the ammonia treatment, and confirms the report of the Indian Commission. (See number of this Journal for July, 1875, pp. 151-4.)

The committee states that their attention being particularly directed to the intra-venous injection of ammonia, this remedy was employed in thirty-one cases, in five of which it was injected by Professor Halford. It cannot be said that the ammonia treatment was in any way beneficial. A few other remedies tried by the committee also failed. The committee regrets that, owing to the great length of time required in the carrying out of these experiments, it has not been able to complete all that it desired to perform, but it hopes to be able to report further on a future occasion. On account of the failure in its hands of the ammonia treatment, the committee invited Professor Halford to personally inject the remedy. He attended on two occasions and experimented on five dogs, all of which died.

The details of 81 experiments on dogs are given.

14. *Bicarbonate of Soda in Suppression of Urine.*—Dr. W. L. LANE states (*Brit. Med. Journ.*, July 15th) that he has found nothing so useful in suppression of urine from renal disease as the bicarbonate of soda. He has used it in a great many cases with success, and quotes the following remark of Dr. Dickinson in his lectures on albuminuria as confirmatory of his statement:—

"But it is worth mention," says Dr. D., "in relation to a rapidly fatal form of nephritis, in which the tubes become widely sealed up as if with molten glass by a pseudo-croupous exudation of fibrin, while the urine is loaded, not

only microscopically but as a bulky precipitate, with large fibrinous cylinders, that all plugging from this cause can be prevented by alkalies."

15. *On Ingravescient Apoplexy: a Contribution to the Localization of Cerebral Lesions.*—Dr. BROADBENT, in a communication to the Royal Medical and Chirurgical Society (May 23), remarked that Sir Thomas Watson, following Abercrombie, described three forms of apoplectic attack: the first sudden, with loss of consciousness and stertorous breathing; the second beginning with sudden pain in the head, faintness, and vomiting, followed by gradually increasing coma; the third characterized by sudden hemiplegia, without loss of consciousness. To the second of these modes of attack the term "ingravescent" had been applied. Its characteristic features were absence of loss of consciousness at the outset, gradual accession of symptoms, and speedily fatal termination; and the cause was invariably found to be a large extravasation of blood. The object of the communication was to show that not only is the hemorrhage large in these cases, but that its situation is, within certain limits, constant, and also that an anatomical explanation can be given of the phenomena of the attack. The seat of the hemorrhage was described as being the outer side of the extra-ventricular corpus striatum (lenticular nucleus of foreign writers), between this ganglion and the "external capsule;" and the explanation offered was as follows: The large amount of blood extravasated arises from the large size of the vessels here found, and from the slight resistance opposed to the effusion; and the absence of loss of consciousness is due to the fact that there is little laceration of fibres or compression of the brain. The situation and relations of the clot are best seen by opening out the fissure of Sylvius, when the convolutions of the island of Reil will be found to be obliterated and spread out over the effused blood. Afterwards, by the usual sections, the further course of the extravasation into the ventricle or into the substance of the hemisphere can be traced. The following cases were related: *Case 1.* A man, aged fifty, was suddenly seized with giddiness and slight mental confusion; left hemiplegia was early noticed, but there was no loss of consciousness. He was brought immediately to St. Mary's Hospital; and, though a little excited, he gave an accurate account of the circumstances attending the attack. There was left hemiplegia, with relaxation of the paralyzed limbs; no distortion of the face, but extreme conjugate deviation to the right of the head and eyes; marked hemianæsthesia affecting the face and body as well as the limbs; slight reflex action on tickling the left sole. The pulse was 108, long and firm, but weak. A tendency to sleep became manifest; and the nature of the case being recognized, an attempt was made to bleed. Three veins were opened in the arms, but only a trifling amount of blood could be obtained; the jugulars could not be made to fill sufficiently, and vomiting interrupted further proceedings. The patient continued to sleep, but could be roused till about eight hours after the attack, when stertor suddenly set in; he was then found to be quite unconscious, and in about twenty minutes he died. During the final stertor, the lateral deviation of the eyes ceased; the heart was felt to beat for seven minutes and a half after cessation of respiration. On post-mortem examination, hemorrhage of large amount was found to have taken place between the corpus striatum and external capsule, flattening out and distending the convolutions of the island of Reil, forming a cavity along the outer side of the corpus striatum and thalamus two and a half or three inches long, and penetrating the lateral ventricle by a fissure extending almost the entire length of its outer angle. All the ventricles were filled with blood. There were hemorrhages into the lungs, spleen, and liver. The kidneys were contracted and granular. *Case 2.* A woman, aged forty-five, had slight paralysis on January 8, 1871, which soon passed off. On the 11th she suddenly lost power in the left limbs, and vomited. She slept almost continuously for two or three days, waking at intervals, and then appeared to be quite sensible. The urine and feces were passed involuntarily, and bedsores formed. After about three weeks the patient was brought to the hospital, and was then found to have left hemiplegia, with some distortion of face and hemianæsthesia. She died three days after admission. On post-mortem examination, hemorrhage was found to

have occurred between the corpus striatum and the external capsule, bulging out the island of Reil, and dissecting off from the hemisphere both corpus striatum and thalamus, and displacing them inwards. The blood penetrated the corpus striatum about its middle for a short distance; it did not reach the ventricles. Stenosis of the mitral orifice, embolisms in the spleen, and contracted granular kidney, were also found. *Case 3.* A cabman, aged sixty, who nine months previously had had a "fit," was noticed by a policeman, about 1 A. M., to be sitting on the box, apparently drunk. He was ordered to get down; answered, "All right," and obeyed; got into his cab, and was driven to a police-station. Here he vomited matters smelling of spirit, and was considered to be drunk by the medical officer who was called in, till left hemiplegia became obvious. When first seen at the hospital, some hours later, he was unconscious, and had less hemiplegia, with rigidity and hemianæsthesia. Reflex movement could be provoked in the paralyzed limb. Apparently there was deviation of the eyes. He died on the day after admission. Hemorrhage had taken place between the corpus striatum and the external capsule, dissecting off the ganglion and the thalamus from the hemisphere, and entering the ventricle by a fissure in its outer angle, at about the middle of its length. The body of the intra-ventricular corpus striatum was thus cut off from its tail and from the thalamus. The clot in the ventricle was not very large, and blood had not entered the other ventricle; that in the hemisphere extending forwards nearly to the apex of the frontal lobe. The kidneys were contracted and granular, and the heart hypertrophied. *Case 4.* A woman, aged fifty-six, previously healthy, began to drop parcels which she was carrying, and felt giddy. She walked some distance, sat down, and became unconscious. When brought to the hospital an hour later, she was apparently unconscious, had left hemiplegia, with rigidity, and continual movements of right limbs. She could be roused, and then answered intelligently. She died two days later. Hemorrhage had occurred in the situation described in previous cases, taking a direction forwards into the frontal lobe, dissecting off the corpus striatum, and bursting into the ventricle. *Case 5.* A coachman was grooming his horse on the evening of December 10, 1875, when he felt a numbness in the right arm; he did not fall, or lose consciousness. Hemiplegia came on gradually in the course of an hour; he vomited, and afterwards went off into a heavy sleep. When brought to the hospital next day, his mind was confused, his speech rapid and indistinct and exactly like that of a drunken man, and he had right hemiplegia with lateral deviation of the eyes (not of the head), and very marked hemianæsthesia. He improved a little, but on the 15th the temperature rose rapidly, being always a degree higher on the paralyzed side; and he died on this day. The hemorrhage in this case was between the external capsule and the ganglia, but further back than in any of the cases previously reported, and the blood had penetrated into the ventricle between the thalamus and the intra-ventricular corpus striatum, and had also dissected up the posterior end of the thalamus from the segmentum, and damaged the superior corpus quadrigeminum. Dr. Broadbent remarked that the occurrence of extensive extravasation of blood in the situation described has been noted by Charcot, Bouchard, Bourneville, Prévost, Duret, and others, and the cases related connected it with the ingravescent mode of attack. Duret had shown what the author had observed independently, that the vessels entering the brain at the anterior perforated space and in the fissure of Sylvius for the supply of the corpus striatum, run up between the gray substance of the ganglion and the external capsule; some of them are of large size, and their mode of termination predisposes to rupture. This is the great cause of the liability to large hemorrhage. The inner layer of the external capsule consists of fibres arising in cell-processes of the corpus striatum, but it is detached with great facility, offering therefore little resistance to extravasation of blood. The Sylvian fissure again affords room for the expansion of the island of Reil, which lies immediately upon the capsule—a fact which diminishes the pressure, and not only permits the hemorrhage, but prevents compression of brain-substance by the effused blood, thus obviating early coma, and explaining the ingravescent mode of attack. In its further course the extravasated blood must tear fibres, and it is remarkable

that it does not burst through into the fissure of Sylvius, from which it is separated only by a thin plane of fibres, or enter the temporo-sphenoidal lobe. The fibres torn are those of the corona radiata as they enter from the central ganglia to pass to the hemisphere; and it is probable that the intersection of the fibres of the external capsule with these, and the passage of minute arteries and larger and more numerous veins, afford minute openings by which the blood makes its way. Ultimately the blood may penetrate the ventricles or split up convolutions.—*Med. Times and Gaz.*, July 15, 1876.

16. *Spinal Apoplexy*.—In the January No. of Virchow's *Archiv* (Bd. lxx.), Dr. GOLTDAMMER describes fully a case of paraplegia, which he regards as undoubtedly the result of spontaneous hemorrhage into the spinal cord, independent of any previous inflammatory softening. On April 21, 1874, a girl, aged fifteen, apparently in perfect health, was suddenly seized with violent pain in the back between the scapulae, extending rapidly to the arms, the lower part of the chest, and the epigastrium. The right leg became at once powerless, and in another half hour the left was in the same condition. Two hours after the commencement of the attack she had complete paraplegia, complete anæsthesia up to the level of the nipples, persistence of reflex movements in the lower extremities, and paralysis of the bladder; in the upper extremities, severe pains, but free movement and normal sensation. The functions of the brain were perfect. The case continued to present all the characters of paraplegia from a localized lesion of the spinal cord. The electric irritability of the muscles remained normal; the urine was retained; and bedsores appeared. After two months, the reflex irritability became excessive; somewhat later spontaneous twitchings of the paralyzed muscles took place; and towards the end of August the legs were persistently contracted, at first in the extended, later in the flexed position. Increasing bedsores led to a fatal result, twelve months from the beginning of the illness. On opening the spinal canal, the dura mater was found normal; the spinal cord was contracted to half its width at a point corresponding to the second dorsal nerves, and here the pia matter was a little thickened. This narrow portion had a vertical extent of about one-sixth of an inch. On section there was no trace of gray matter, but the greater part was of rather hard consistence, and in colour rusty brown with whitish-yellow streaks. The white columns on the left side were softer and tinged gray. A rusty streak was traceable in the situation of the right posterior cornu upwards to the cervical swelling, and downwards as far as the fifth dorsal nerves. On microscopical examination, the dense rust-coloured portion was found to consist of a firm network of connective tissue fibres, with embedded fat globules, large masses of hæmatoidin crystals, and collections of brown granular pigment. Nerve-elements were entirely wanting, and the vessels showed fatty and granular degeneration. The grayish columns on the left side, and the whole cord for a few millimetres above and below the rusty cicatricial tissue, were in a condition of softening with the usual granule-corpuscles replacing the nerve-fibres and ganglion-cells. Secondary degeneration could be traced downwards in the lateral columns to the lumbar region, and upwards in the posterior columns as far as the calamus scriptorius.—*London Med. Rec.*, July 15, 1876.

17. *Pathological Alterations in the Nervous System in Rabies*.—Dr. KOBSENIKOFF, of St. Petersburg, describes the following microscopical changes found by him in the nervous system of ten dogs which had suffered from hydrophobia. The principal alterations were met with in the sympathetic and spinal ganglia, and were of two kinds: 1. Extreme dilatation of the bloodvessels, which were infarcted with red blood-corpuscles. Some of the latter had escaped from the vessels, and lay outside, scattered among a number of white corpuscles in the perivascular spaces. In some parts of the vascular walls, hyaloid masses of various shapes were visible, which sometimes projected into the lumen of the vessels so as to block them completely. These masses appeared to be produced by a metamorphosis of the white and red blood-corpuscles. 2. Around the nerve-cells, collections of round indifferent cell-elements were seen, some of

which had penetrated into the protoplasm of the nerve-cells, so as to alter the shape of the latter and give them a jagged outline. Sometimes the nucleus was forced outwards to the edge of the nerve-cell and sometimes the new cell-elements appeared to occupy the place of nerve-cells, which were no longer visible. Dr. Kobsnikoff remarks that the pathological changes which occur in rabies closely resemble those described by Dr. Popoff in typhoid fever, and after mechanical injuries to the nervous system.—*Med. Times and Gaz.*, July 29, from *Centralblatt*, Nov. 29, 1875.

18. *Hereditary Transmission of Syphilis*.—Dr. M. KASSOWITZ, of Vienna, has published in *Stricker's Jahrbücher* (Pt. iv. 1875) his somewhat extended experience in the Hospital for Children in Vienna, where he sees about thirty or forty cases of inherited syphilis in the year. The first part of the paper is devoted to the question as to the mode in which syphilis is transmitted. The possible methods may be divided into two—(1) Direct transmission by the sperm or germ cell being infected by a syphilitic father or mother; (2) Infection *in utero* from a syphilitic mother. The depth and seriousness of the affections in inherited syphilis, suggest at once that the infection is by the first method, and has involved the creature from its generation, and this view is supported by the author's own observations. Out of 119 cases he finds that the inheritance was clearly from the father in 43 cases, the mother being healthy in that number; both parents were syphilitic in 23 cases, the mother alone in 10; in the remaining 43 cases the mode of inheritance was doubtful. These statistics indicate that the father is most frequently the source of infection, and they corroborate the view that a healthy mother may bear a syphilitic child. He believes, in fact, that this is a frequent occurrence. Intimately related to this is the question whether a child, who is syphilitic from the father, can infect the mother through the placenta? and the author believes that there is no evidence of this. Similarly a syphilis acquired by the mother during pregnancy is not transmitted to the child. The syphilis of the mother may cause abortion, may affect the nutrition of the fœtus; but unless the mother has been syphilitic at the period of conception, she does not transmit it. Syphilis is therefore transmitted either by father or mother only at the period of conception. This leads to some interesting speculations as to the form or vehicle of the syphilitic virus. It must be more stable than that of other infective diseases. It seems only carried by corpuscles, such as those of blood or pus, and such bulky objects are not capable of passing the septa between child and mother. It is not conveyed in milk, or blood serum, or vaccine lymph, unless these contain some such corpuscles. In this respect it differs from the virus of measles or smallpox, which again may be communicated during pregnancy by mother to child. The virus of these is volatile as compared with the more fixed syphilitic poison. Then it is noted that the intensity of the virus diminishes in direct arithmetical proportion with the lapse of time. The first child after a recent infection will die in utero at the fifth or sixth month, the next will live till the seventh or eighth month, then a child may be born alive at full time, but with an eruption of pemphigus, or the eruption may begin during the first days of extra-uterine life, or in later cases not till the second, third, or fourth week, or it may be delayed till the second or third month. If the first occurrence of the eruption is delayed to the third month, the intensity is already much diminished in the parents. It is exceptional for a child to be born alive during the earlier years after infection of the parents, unless mercurial treatment has been used, and almost all children born in the first year are premature. All these facts point to the virus being coarse, and almost measurable in its quantity. According to the author's cases, syphilis may be transmitted fourteen years after the original infection, but on an average it stops at ten years. It may be transmitted during the entire absence of symptoms, and the intensity of the symptoms in the child seems entirely independent of the presence of manifestations in the parent. Lastly, inherited syphilis may intensify other diseases, such as scrofula, phthisis, rickets; but it does not directly produce these. It is a perfectly definite and distinct disease, with characteristic phenomena, which the author in a future paper proposes to describe.—*Glasgow Medical Journal*, July, 1876.

19. *The Spleen and Lymphatic Glands in Diphtheria.*—Prof. C. BIZZOZERO, of Turin, has found in the spleen and lymphatic glands a special lesion which has not hitherto been described. In the spleen of diphtheria, whether enlarged or not, the lymphatic (Malpighian) follicles present in their central parts a collection of cells which are larger than the lymphoid cells of the follicle, and contain several nuclei as well as fat granules; a similar condition is found in the follicles of the intestine and some of the mesenteric glands. Sometimes the process is so advanced that at first sight the whole centres of the follicles, in the spleen or elsewhere, seem composed of granules. The author adds that in two cases of diphtheria he has found a membranous inflammation of the mucous membrane of the stomach, the condition being essentially similar to what is so common in the larynx, but unusual in this situation.—*Glasgow Med. Journal*, July, from *Stricker's Jahrbücher*, Pt. ii. 1876.

20. *Dissecting Aneurism.*—Dr. P. DUROZIER records (*L'Union Médicale*, July 18, 1876) two cases of this, and awards to the late Dr. Pennock of this city the credit of first establishing the true situation of dissecting aneurism in an article published in this *Journal* in November, 1838.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

21. *Cases Illustrating the Successful Treatment of Suffocative Goitre without Excision of the Gland.*—Mr. LENNOX BROWNE, in a communication made to the surgical section of the British Medical Association, stated that he was compelled to bring forward these cases, because, at the last annual meeting of the Association in Edinburgh, he had taken occasion, on the reading of Dr. Heron Watson's paper on Excision of the Thyroid Gland, to state that such a serious operation was unnecessary, because there were other remedial measures to the full as efficacious and in no way dangerous. There was constant danger from hemorrhage in excision of the gland; and, of seven cases, Dr. Watson had lost one from this cause, even though he had observed the precaution of tying the thyroid arteries beforehand. The variety of bronchocele causing suffocative symptoms was almost always fibrous; and the particular measures to which Mr. Browne referred for cure of these cases were the injection of iodine into the substance of the gland, and the introduction of a seton so as to produce absorption. In the cases to be related, it would be seen that the seton was generally preferable. The relief of symptoms was most rapid and complete. The tumour, as a rule, entirely disappeared; there was never recurrence; there was not the slightest danger, the patient was not even confined to bed; and the after-marking was exceedingly slight. Six cases were related, all of which had been seen by or had been under the observation of other medical practitioners. In all, the result had been successful. The following were points of clinical interest in the cases. In all except the first, in which the cause of dyspnoea was direct pressure on the trachea, as well as on the left recurrent nerve, the tumour lying between the sternum and windpipe, suffocative symptoms and dysphagia were due to the embracing of the windpipe and gullet by extension of one or both lateral lobes. In none was the tumour of large size; the author stated that it was not the dimensions, but the unyielding nature and position of the swelling that caused trouble. In three cases, there were symptoms of considerable sympathetic derangement. In all, there was globus hystericus; and the author mentioned that he had hardly ever seen a patient with this symptom in whom an enlargement of the thyroid, limited it might be, could not be discovered. Treatment of some of the later cases had been completed by a course at the bromo-iodine spa of Woodhall, the great therapeutic merits of which seemed to be but partially recognized by the profession.—Mr. Bell (Bradford) asked the exact method of procedure, as he had a case which he

thought suitable for the treatment advised by the author.—Mr. Jonathan Hutchinson (London) considered the paper one of great value, and especially as to the experience of the author on the question of electrolysis, he having found benefit in only one, and that a very simple form of goitre, out of eight cases. He observed that, of the six cases related, three had been treated by iodine injections, and three by seton; of the three in which iodine was used, suppuration had taken place in two, unexpectedly, it would appear, to the author. He would like to know to which method Mr. Lennox Browne would now give preference.—Mr. Favell (Sheffield) asked if the author would consider the size of the tumour as of any importance as influencing the advisability of operating. He had recently seen a very enormous goitre occurring in a young gentleman, causing such severe dyspnoea as to cause death.—Mr. Barber (Sheffield) inquired if the author would operate in patients of advanced age. He observed that, in those cases which had been related, no patient had been above middle age. Mr. Lennox Browne, in reply, said that, in employing the syringe or seton, local anæsthesia might be used. It was quite true, as the President of the Section had suggested, that he attributed the benefit of the iodine to the suppuration which had been induced, and for that reason he gave preference to the seton in cases of fibrous goitre. It was important to insert and to bring out the needle as far back as possible. He would not regard the size of the tumour as a bar to operation, and had seen very considerable goitres reduced by the seton. He had advised the seton in the case quoted by Mr. Favell, and, viewing the result, one could not but regret that it had not been tried. He had operated on patients much older than those whose cases had been related. He never advised operation of any kind except for dyspnoea, but he had frequently performed it when asked to do so, on account of disfigurement.—*Brit. Med. Journ.*, Aug. 26th, 1876.

22. *Treatment of Fractures of the Skull.*—Mr. W. F. FAVELL, in his interesting address on Surgery at the recent meeting of the British Medical Association, after referring to the marked change of treatment which has taken place in the treatment of fractures of the skull, and quoting the opposite views of Pott, Abernethy, and Lawrence on one side, and Prescott Hewett and Erichsen on the other, says: "Perhaps the most obvious cause of these diverse opinions lies in the fact that, in cases of depressed fracture, we can hardly lay down a hard and fast line of treatment—much must be left to the careful and anxious consideration of the surgeon unhappily meeting with such cases. I think recent experience has abundantly proved that compound depressed fractures of the skull in adults do get well without operative interference; and, in illustration of this fact, I beg for a moment to refer you to three cases published in the *British Medical Journal* of July 8th by Mr. Gamgee, of Birmingham. Here we find rapid and uninterrupted recovery from compound depressed fracture of the skull in adults, one man being fifty-five years of age, and the other two twenty-five years old. They were all treated by perfect rest, cold to the head, and aperients. I could adduce other instances, but I refer to these as cases recently published, and probably familiar to many readers of the *Journal*."

"On the other hand, it is a well-known fact that such happy terminations are by no means constant, and that the trephine or some similar instrument has sometimes to be used to relieve inflammatory symptoms, which occur as the results of irritation set up by the fractured bone, or to give exit to pus; even then recovery is by no means to be despaired of, though, of course, operative interference under such circumstances is far less promising than when undertaken without the inflammatory complication. Referring to my notes of cases in the hospital, I find that only once in the last five years have I had recourse to the trephine, and I did so in what, I almost think, is a typical case for operation."

"H. D., a woman, aged 39, was brought into the infirmary with a history that she was engaged in some street row, and was knocked down by a stone thrown into the crowd. I found a large wound leading down to a comminuted punctured fracture, the portions of bone being driven deeply down. There were no head-symptoms. Finding it impossible to pick out the depressed portions with

forceps, I removed a semicircular piece of the sound bone with a trephine, and was able then easily to remove six comminuted portions of bone, some of them driven under the uninjured bone, and amounting in the aggregate to a piece as large as a half-crown. The dura mater was scratched, but not punctured. The woman was kept quiet, with cold to her head, and made a rapid recovery without any untoward symptoms. I think I may instance this as a case in which it is extremely doubtful whether so fortunate a result would have been obtained had I refrained from operation. I think, perhaps, there is a tendency in these days to overrate the danger of operative interference in such cases; for, where grave bone injury already exists, and where air has already had access to the dura mater, and probably also foreign bodies, such as grit and dirt, it is open to question whether an operation, such as I have just described, performed with all possible care and delicacy of manipulation, adds very materially to the existing danger.

"Certainly, I should be little disposed to lay down a defined line of treatment in cases such as I have been describing. Much must be left to the discretion and anxious thought of the surgeon, and whilst bearing in mind on the one hand that depressed compound fractures of the skull, even in adults, do get well without operation, one ought not to hesitate to interfere where the existing conditions of the fracture are such as to make one feel that there is probably less risk in interference than in simply waiting for results."—*British Medical Journal*, August 5, 1876.

23. *Fracture of the Trochanter Major.*—Dr. F. W. WARREN submitted to the Dublin Pathological Society (Jan. 22, 1876) an example of this extremely rare injury, obtained from a dissecting room subject, a man apparently about 50 years of age. Through the base of the trochanter major there is a distinct fracture passing obliquely downwards and backwards, the detached trochanter being drawn upwards and inwards so that its summit projects above the level of the head of the femur. The tendinous expansions which cover the process are intact. Owing to the detached fragment being drawn upwards by the action of the muscles, the lower part of the fractured surface of the femur corresponding to the original site occupied by the trochanter is exposed, and, by passing the finger over it, presents to the touch a rough sensation. The detached trochanter is firmly connected to the shaft by dense ligamentous tissue, and into its apex is inserted the glutæus medius, the glutæus minimus being attached along its antero-lateral margin. When compared with a bone, prior to the union of the trochanter to the shaft through its epiphysary line, the fracture is found to take a direction exactly corresponding to the epiphysary line. On comparing the specimen with the opposite healthy femur, the fractured surface of bone corresponding to the original site of the detached trochanter presents an obliquely flattened surface exactly corresponding to the epiphysary plane, and which, when traced upwards, is directly continuous with the upper part of the neck of the thigh-bone. There are no osteophytic growths of any kind. The hip-joint is perfectly healthy, and there is not the slightest appearance of any recent injury or violence.—*Dublin Journ. Med. Sci.*, July, 1876.

24. *Fractures of Bone in the immediate vicinity of important Joints.*—Mr. FAVELL, in his address on Surgery before the British Medical Association at its recent meeting, justly remarks: "There are few cases in surgery in which the accurate diagnosis is often more difficult, the anxiety involved greater, and the results less satisfactory, than in cases of this nature. Every practical surgeon is familiar with the impaired utility of wrist and hand which we occasionally see, particularly in old people, as a consequence of the fracture of the carpal end of the radius; and again, impaired mobility of the elbow-joint is not unfrequently seen, as a result of fracture through some portion of that complicated and important articulation; and I venture to say that such consequences are sometimes unavoidable, in spite of the most carefully conducted treatment; nay, I think I may go even further, and assert that cases do occur in which the surgeon, by skilful and carefully conducted treatment, has obtained the best

results he could hope for, and which still are failures in the eye of the patient, ignorant as he is of existing conditions and almost inevitable consequences.

"Surely, gentlemen, these considerations should teach us a lesson; they should teach us to look very charitably upon alleged failures in treatment, or upon so-called cases of malpractice. It is one thing to criticize the treatment of a deformed or distorted joint weeks, or perhaps months, after the receipt of injury, when all *immediate* effects of such injury have disappeared; but it is a very different thing when contusion, inflammation, swelling, and pain obscure the injury and interfere with manipulation, so to direct our treatment, as always to insure a satisfactory result.

"The case to which I wish to direct your attention for a few minutes, and which, through the kindness of my friend, Mr. Wheelhouse, I am enabled to illustrate by a very instructive preparation, is one of dislocation of the hip, complicated, as I believe, by fracture of the acetabulum, that is, of the rim of the acetabulum.

"A. B., a young man, a commercial traveller, was standing on the platform at a railway station, when he saw the train by which he wanted to travel passing rapidly through the station; he ran up to it, sprang upon the foot-board, and attempted to grasp the door of a carriage, but, being swung round by the momentum of the train, he was unable to keep his hold, and was thrown violently upon the rails, rolling over and over when he came to the ground. He lay stunned for a few minutes, and, when he attempted to get up, found his right leg so injured that he could not rise. He was carried into the waiting-room, and was seen very shortly afterwards by Dr. M., the railway company's local medical officer. This gentleman made a very careful and deliberate examination of the injured limb, and, as manipulation gave great pain, he put the sufferer under the influence of chloroform, so as to give himself every opportunity of arriving at a correct estimate of the nature of the injury. After nearly an hour's examination, he came to the conclusion that there was no dislocation, no fracture, but that the man was suffering from severe contusion. Afterwards, the sufferer was carefully laid in a railway carriage, and conveyed to his home in Manchester. Here he sent for his own surgeon; the same examination again was gone through, and the same result arrived at. As soon as the subsidence of swelling allowed it, a long splint was applied to keep the part perfectly at rest; and subsequently, as much pain about the hip was still complained of, his medical man, for his own satisfaction and that of his patient, called in a third surgeon, a man whose extended experience in cases of accident was undeniable. He found the limb lying flatly on the bed beside its fellow; careful measurements, conducted in the orthodox manner, proved that the injured limb was as long as, and at one time rather longer than, its fellow; and he coincided in the conclusions already formed, and in the propriety of the treatment adopted. And so the limb was kept at rest for some time longer. Here, then, we have three surgeons, separately and carefully examining this hip, and arriving at the same conclusions. But mark what followed in this singularly interesting case. When lapse of time and subsidence of pain warranted it, the splint was removed, and he was allowed to get up and attempt to move about. He did so, and attempted to bear some slight weight upon the injured leg, and *after* that he noticed, *for the first time*, that the injured leg was rather shorter than the sound one. This amount of shortening speedily increased to the extent of a couple of inches, with inversion of the foot; and, to cut a long story short, he consulted a fourth surgeon, who told him that his hip was dislocated; and eventually an action for damages ensued. In consequence of this, Mr. Wheelhouse, of Leeds, and I were asked to examine the case, and give evidence upon it. When we saw it, several months after the accident, the evidences of dislocation were clear enough; there were the characteristic shortening, the inverted foot, and the round head of the bone clearly resting upon the dorsum of the ilium. One of two things, then, must have happened in this case. Either (as was alleged) dislocation of the hip had occurred at the time of the accident, and had been overlooked, or else dislocation had taken place subsequently, as a result of some obscure injury to the joint. Against the first hypothesis were the testimony of three surgeons, who

had all examined it carefully for dislocation or fracture, the fact of the absence of deformity, and the absence of shortening of the limb; whilst in favour of the latter hypothesis, in addition to what I have just stated, was the fact that no shortening took place till the man put weight upon the leg, and then it was immediately noticed. The only way in which one could reconcile the fact of undoubted *present* dislocation, with a history so opposed to its existence for some time after the accident, was on the hypothesis that, at the time of the accident, which was a very violent one, there was fracture of the rim of the acetabulum; that, so long as no weight was put upon the leg, the head of the femur remained *in situ*; but that, as soon as weight was borne upon the leg, the head of the bone escaped from the damaged acetabulum, and was soon drawn up upon the dorsum of the ilium. This theory was very ably argued by Mr. Wheelhouse, and surely it was a reasonable one—more reasonable than that a dislocation presenting such marked features as dislocation of the femur on the dorsum ilii, should have been overlooked, though carefully searched for, by so many surgeons of ability and experience; and, though the probability of such an occurrence was denied, I am in a position, through the kindness of Mr. Wheelhouse, to show you a preparation taken from a case of accident admitted into the Leeds Infirmary, since the occurrence I have just related, which admirably illustrates the argument then urged. The case was admitted into the infirmary for injury to the hip and severe internal injuries. Dislocation was diagnosed, and reduction readily effected. The patient lay in bed some days, and then died from internal injuries. During the removal of the patient from the bed, the hip, which had been in perfectly good position so long as the man was at rest, again became dislocated, and a *post-mortem* examination revealed the condition I now show you, viz., ‘fracture of the rim of the acetabulum.’

“Erichsen, speaking of the treatment of such cases, says: ‘But with every care, a return of displacement will readily take place, and an unsatisfactory result can scarcely be avoided—shortening of the limb, and consequent lameness, being almost inevitable.’ Cases such as this one I have just related are of immense practical interest both to the surgeon and his patient; certainly the patient has a right to expect that everything shall be done for him that careful judgment and judicious management can effect; but how often does the surgeon get undeserved blame, when he has the misfortune to treat an injury so complicated that, in spite of all care and skill, he cannot avert an unsatisfactory result. I can imagine and excuse a man being angry, when he finds himself permanently crippled by an accident, which at first, to all appearance, may not have seemed of a very formidable nature; but surely we, fellow-workers, all so fallible, ought to criticize the work of our brothers in a spirit of the widest charity.”—*British Med. Journal*, August 5, 1876.

25. *New Method of Reducing Dislocations of the Shoulder*.—Dr. KUHN, of Elbeuf, describes a new method of reducing dislocations of the shoulder. He says it is impossible to ignore the difficulties which often attend the reduction of dislocations of the shoulder. These difficulties are partly owing to the fact that the scapula follows the traction made on the humerus, which causes a loss of a large part of the force employed for the stretching of the muscles.

By adopting the reverse method, that is to say, by applying the force to the scapula whilst the humerus is the fixed point, we no longer reduce the humerus; on the contrary, we fix it and reduce the scapula. There is no loss of power, as it is easy to prevent the arm from following the scapula. The difficulty which is found in reducing these dislocations, however, arises not only from the mobility of the scapula, but also from the power of the muscles, which it is necessary to put on the stretch. It is easy to see that, by this new method of operating, we shall not have to overcome the resistance of the pectoralis major and latissimus dorsi, but of the scapulo-humeral muscles (subscapularis, supraspinatus and infraspinatus, and teres major and minor), which are much smaller and less powerful than the former.

Since the discovery of anæsthetics, we can overcome the resistance of muscles, by chloroform and ether, the administration of which ought to be pushed until relaxation of muscles is produced. Many practitioners, however, are

opposed to the use of these sometimes dangerous means for an operation generally so little serious as the reduction of a simple dislocation of the shoulder.

By following out these principles it is possible, more often than not, even alone and without assistance, to reduce a dislocation of this nature. A cushion of a conical shape is to be placed in the axilla, the base of the cone being downwards; the surgeon, standing at the patient's side, lightly draws the arm downwards, and at the same time presses it firmly against the pad in the axilla, so as to make it into a lever of the first kind. Then, taking the inferior angle of the scapula in the other hand, he raises that bone and gives it a see-saw motion. Coaptation soon follows, the two parts returning to their natural position, by a simultaneous effort made on the lower extremity of the humerus and the inferior angle of the scapula. If the head of the humerus be displaced forwards, the angle of the scapula should be directed outwards, at the same time that it is raised. It should be directed inwards if the dislocation be backwards. If any difficulty be experienced in making the reduction, the task of holding and directing the arm should be confided to an assistant.—*London Med. Record*, July 15th, from *Gaz. Med. de Paris*.

26. *Removal of Spleen*.—M. PÉAN exhibited to the French Academy of Medicine, July 18, two patients upon whom he had successfully performed ablation of the spleen, in consequence of large tumours of the organ. The first was operated upon in September, 1867, and was shown to the Academy soon afterwards, since when she has continued to enjoy excellent health. The second, a woman twenty-four years of age, was operated upon three months ago, in consequence of the success that had been obtained by M. Péan in the first case, and in gastrotomy in general. An incision having been made from the pubes to the epigastrium, the hypertrophied spleen was found extending from the left hypochondrium to the right iliac region. Owing to its friability, great precaution was required in removing it, a ligature having first been placed around the omentum *en masse* prior to the excision. The omental stump, containing some enormous sanguineous and lymphatic vessels, was brought down to the lower angle of the wound. Very little blood was lost; and the patient, at the end of a month, was enabled to resume her occupation in a good state of health, and completely cured.—*Med. Times and Gaz.*, July 29, from *Bull. de l'Acad.*, No 29.

These cases are reported in full in *L'Union Médicale* for July 29, 1876. Of six cases of splenotomy which have been reported in the last twenty years, two only, M. Péan says, have been successful.

In the *British Medical Journal* for July 8, 1876, it is stated that Dr. J. Marion Sims "assisted at a case of excision of an hypertrophied spleen, which weighed between eleven and twelve pounds."

27. *Acute Arthritis of the Knee-Joint, and Necrosis of the Entire Shaft of Tibia in an Infant*.—Mr. GEORGE BROWN read to the Clinical Society, May 26th, an account of a case of this in which amputation was performed, followed by recovery. He began by stating that he brought the case before the notice of the Society on account of the interest which attaches to the rare and grave surgical disease which necessitated the performance of the operation; and because he believed that it was the first case in which amputation of the thigh had been followed by recovery in a patient less than twelve months old. The patient, Jane P., aged eight months, was brought to Mr. Brown, at the Islington and North London Provident Dispensary, on December 23, 1875, apparently suffering from an affection of the knee-joint. Up to the previous evening the child was quite well. When first seen the child was well nourished, but had cut no teeth, and had an anxious expression of countenance. The right knee was slightly swollen; the leg was semi-flexed, and hotter to the touch than the left. No fluctuation; no history of injury. The patient was evidently suffering much pain; refused food, and was unable to sleep. Next day the swelling of the knee had increased; the temperature rose to 103°; and the pulse was 140. The swelling of the knee and leg continued to increase until the 28th, when the right knee and calf were three inches larger in circumference.

than the left. Distinct fluctuation could be detected all around the joint and about three inches down the leg. On the 29th the leg was opened just below the patella, and seven ounces of purulent matter were evacuated, containing a quantity of large curdy flakes, with some oil globules. On passing the finger into the wound, the tibia could be felt quite rough, and denuded of periosteum as far as the finger could reach. The epiphysis was felt to be detached from the shaft. The temperature was then normal, to which condition it had fallen suddenly on the 28th. After abscess was opened, the patient appeared to suffer much less pain, and went on well for some days; but on January 5, she had an attack of vomiting; the leg became erysipelatous. The temperature rose to 104°, and continued very high for several days. The wound discharged pus freely, and the erysipelatous condition of the leg continued until January 23. Meantime the patient became much emaciated, and was gradually sinking. Mr. Brown then proposed amputation, to which the parents consented; and he performed the operation, assisted by Mr. F. H. Hume and Mr. Sebastian Gardner, on January 25. The thigh was amputated in the lower third by the lateral flap method. After the operation was completed, the child became cold, blanched, and pulseless, and only recovered from the shock and the effects of the chloroform after artificial respiration had been kept up for some time. The stump healed almost entirely by first intention, but a small sinus remained open for nearly three months. A small spiculum of bone was then removed from the sinus, and it healed up at once. On examining the amputated limb, it was found that the entire shaft of the tibia was denuded of periosteum and necrosed; the epiphysis was completely separated from the shaft, and in it was an abscess-cavity, which opened by a small pin-hole into the joint about the centre of the external semilunar cartilage; the articular cartilages of the joint were otherwise healthy. The synovial sac was slightly thickened. Mr. Brown was of opinion that the original lesion was a subarticular abscess in the epiphysis—probably of scrofulous origin, as no history of congenital syphilis could be obtained. This abscess first opened into the joint, and gave rise to the acute inflammation for which the patient first came under treatment. Later, the abscess extended downwards to the periosteum, causing acute periostitis and rapid necrosis of the shaft. Such cases were, fortunately, rare, and seldom came under the notice of surgeons, excepting those who have extensive practice among children. Mr. Thomes Smith has described the disease very fully in the *St. Bartholomew's Hospital Reports* for 1874, and given notes of several cases which came under his notice at the Children's Hospital, most of which terminated fatally in a rapid manner. Mr. Smith had named this disease "acute arthritis of infants." Mr. Barwell, in his work on "Diseases of the Joints," published in 1861, quotes from Stromeyer a description of a similar affection, but adds that up to that time he had never seen a case of the kind himself, neither could he find any record of a case in the writings of English surgeons. The presence of erysipelas, Mr. Brown remarked, is generally held to contra-indicate the performance of a surgical operation. In this case there was well-marked cutaneous erysipelas of both legs on the day appointed for the operation; but as it was evident that the child was rapidly sinking, it was decided to amputate at once, and run the risk of erysipelas attacking the stump. The result of the case, Mr. Brown observed, shows the wisdom of the course adopted.

—*Med. Times and Gaz.*, July 8, 1876.

28. *Subcutaneous Osteotomy*.—Mr. MAUNDER read before the Clinical Society (May 12) a paper on subcutaneous section of bone, and exhibited patients to show how great and important results may be obtained with comparatively little risk. The femur was the bone concerned in all the five cases. Two of these operations had been performed on the same patient, with an interval of some twenty months. This patient, M. A. J., now ten years of age, had been the subject of hip-joint disease, which had left the left thigh fixed by fibrous ankylosis at a right angle to the line of the spine, the head of the femur being wasted and displaced upon the dorsum ilii. Notwithstanding section of contracted muscles and subcutaneous division of the neck of the bone, as suggested by Mr. William Adams, the deformity was in no way lessened, and Mr. W.

Adams himself also failed a week subsequently in a similar case. This failure led the author to consider how otherwise to act. The outcome was the operation described, illustrated with such gratifying results. After alluding to Messrs. Broadhurst, L. S. Little, W. Adams, and Gant, as pioneers in this department, he pointed out that while a certain number of cases of deformity at the hip-joint were remediable by section of the neck of the femur, a large number of instances of deformity in this region were not suited to that operation, but could be readily relieved by a division of the femur at a suitable point below the upper extremity of this bone. Three cases were given, of which that of the child M. A. J. above alluded to is typical. The first operation on her having failed, a second was performed, but below the lesser trochanter. Operation: Following the method suggested by Professor Volkmann, of Halle, Mr. Maunder uses chisels and a mallet. He employs a double-edged knife for the puncture of the soft parts, and lays great stress upon dividing these in such a manner that when the operation is completed, the wound in the skin shall not communicate directly with the wound in the bone. He advocates, also, great care when one instrument is replaced by another, as the knife by a chisel, and one chisel by another, the one instrument being used as a guide to the other. The wound may or may not be closed by a catgut suture, and a compress and strapping are employed. Bony union must be encouraged by rest and a suitable splint. He deemed it important, also, to support the soft parts about the wound in order to prevent oozing into the track of this by the application of a sand-bag after the patient had been returned to bed. Such was the nature of the second operation on M. A. J. above mentioned. After both, primary union of the soft parts occurred. The child was shown, standing erect, and with her lower extremities parallel. Another instance was that of a young man, twenty-one years of age, who had been the subject of hip-joint disease for seventeen years, and in whom a discharging sinus still existed and does exist. The same operation was performed, and the deformity has been remedied; he can stand erect with the lower extremities parallel. Possibly the most interesting case, and that showing the great importance of osteotomy, was that of Richard H., aged thirty. He was a sailor by occupation, and having broken his left thigh at sea, and being without surgical aid, the fragments had united at an awkward angle and with complete eversion of the foot. The man stated that the leg was perfectly useless to him as a sailor by reason of this eversion of the foot, and was most anxious to have something done to remedy this condition. Here the shaft of the bone was divided; the foot could then be turned to the required position, and was so maintained. The wound healed primarily; the man never had an ache or a pain or a disturbed night, and in six weeks bony union had occurred. Thus this patient, who at thirty years of age was deprived by the accident of his means of livelihood to which he had been educated, was by the operation restored to usefulness. In contemplating osteotomy in reference to the upper extremity of the femur, the point at which the bone is to be divided must depend upon the altered and relative condition of parts. Mr. W. Adams's operation (section of the neck of the thigh-bone) appears to be applicable to cases of ankylosis and deformity in which the head of the bone remains in the acetabulum, both without material loss of substance, and also in the absence of much surrounding thickening about its neck. On the other hand, if there be great thickening, requiring an extensive use of the saw, so as to leave large surfaces of sawn bone in apposition, this extent of surfaces alone will prevent a restoration of the extremity to the desired position, and small benefit only will result from the operation. Also, cases of hip-joint disease associated with more or less loss of substance, displacement of femur, fixity of its upper extremity by fibrous ankylosis and shortened muscles, and distortion of the limb, are not suited to it, as was proved by the first operation on M. A. J., where the deformity could not be remedied by it. Here it is that section of the bone below the lesser trochanter will make the surgeon quite independent of the fixed upper end of it, and will allow him to place the extremity in any position he may think fit, and insure the greatest prospective benefit to his patient. Thus it will be evident that the large majority of cases of severe deformity resulting from disease of the hip-joint, will be best remedied

by the division of the thigh-bone at some point below the lesser trochanter, whilst a minority will still remain best suited to section of the neck of the bone. The author felt justified in saying that the three patients whom he exhibited illustrated the value of the operation described, and the result is that they who were previously burdens upon, can now become useful members of, society.

Mr. William Adams said the members of the Society would congratulate Mr. Maunder upon the success of his operation of partially dividing the shaft of the femur below the small trochanter, subcutaneously, by means of the chisel and mallet; and then breaking through the remaining portion, so as to allow of the limb being afterwards set in a straight position, and firm union obtained. In the three cases exhibited, deformity had been overcome, and the limbs were both straight and useful. This operation will be found applicable to a class of cases in which the operation of subcutaneous division of the neck of the femur cannot be performed, in consequence of structural alterations from disease in the head and neck of the bone. Another operation, in the same situation, and applicable to a similar class of cases as Mr. Maunder's, had previously been performed by Mr. Gant, who used the small subcutaneous saw instead of the chisel and mallet, partially dividing, and then breaking the bone. Mr. Gant has twice performed this operation successfully, no suppuration occurring in either case. Mr. Adams observed that he had also twice divided the shaft of the femur subcutaneously with the small saw for badly united fractures; and once the shaft of the humerus, for straight ankylosis of the elbow-joint. In one case no suppuration followed, and but very little in the other. Subcutaneous osteotomy, Mr. Adams observed, has of late received a great stimulus, but bones cannot always be divided with the same degree of safety or freedom from inflammation as tendons, though the great majority of the cases operated upon have proceeded just as favourably as subcutaneous tenotomy. There are now three subcutaneous operations for dividing the neck or shaft of the femur in cases of bony, and sometimes in fibrous ankylosis of the hip-joint—cases which were not previously amenable to treatment, except by operations of such magnitude as those of Rhea Barton of Philadelphia, and Sayre of New York. 1st. The operation proposed by Mr. Adams, of subcutaneous division of the neck of the thigh-bone, applicable to all cases of ankylosis in which there is but little diminution in size or alteration in shape of the head and neck of the femur. Twenty-four of these operations have been recorded, with only one death from pyemia, and one eight months after the operation from chronic suppuration with kidney disease. 2d. Mr. Gant's operation of dividing the shaft of the bone subcutaneously with a small saw just below the small trochanter, applicable to cases in which the neck of the femur could not be divided in consequence of the structural alterations from disease. 3d. Mr. Maunder's operation in the same situation as Mr. Gant's, and applicable to similar cases, but performed by means of the chisel and mallet. Mr. Adams's experience led him to prefer Mr. Gant's operation when the neck of the femur cannot be divided, and he believed that the small subcutaneous saw will be found a more manageable instrument than the chisel and mallet.

In reply to a question by Mr. Sydney Jones, Mr. Adams stated that he had not succeeded in retaining motion in any of the five cases in which he had divided the neck of the femur, but Mr. Jessop (of Leeds), Mr. Lund (of Manchester), and Dr. Sands (of New York), had all succeeded in retaining motion.—*Med. Times and Gaz.*, June 17, 1876.

29. *Osteotomy in France.*—A long discussion lately took place at the Société de Chirurgie de Paris, on the subject of osteotomy in the treatment of rickety deformities, during the course of which the opinions of many French surgeons were elicited. M. Jules Boeckel, of Strasburg, described thirty-four cases of osteotomy, performed in some cases for rickets, in others for extreme deformities from other causes, and in all the operation was successful. The most promising age he concluded to be from fifteen months to seven years, after, of course, the deformities have become fixed, and treatment by other means has become impracticable. The method recommended by M. Boeckel is to place a chisel in an opening made through the skin and periosteum, and divide the

bone by a few blows with a mallet. He prefers to complete the section of the bone at the time—not, as some surgeons have recommended, to allow the wound to heal, and then to complete the division by external violence. After the section the limb is, of course, kept immovable by a plaster bandage. In some cases, the removal of a wedge of bone was necessary. M. Alphonse Guérin pointed out that osteotomy for rickets was practised in 1838 by Jobert (de Lamballe), although his operation was not subperiosteal. Most of the subsequent speakers agreed with M. Blot in deprecating the operation at the early age at which it had often been performed. This was the opinion of M. Léon le Fort, who would limit osteotomy to children of ten to twelve years, believing that other means will, at earlier ages, effectually conquer even the most extreme rickety deformities. He expressed the opinion that English and German surgeons have not, in early cases, given sufficiently long trial to other methods of treatment. He showed casts of the legs of two children, one of five and the other of eight years, who had been unable to walk in consequence of extreme curvature, and in whom the deformity was completely removed in fifteen months and two years by simple mechanical appliances. He believed that the chisel rendered the operation less grave, but believed that it was only trivial at the early ages, at which it was really not needed; while at the later ages, at which alone its performance was justified, it was really a much more serious matter than had been asserted. In the subsequent discussion, the treatment of rickets and that of the deformities were not carefully distinguished. M. Verneuil and M. Marjolin, both opposed osteotomy, and the latter quoted some statistics of M. Perrochaud, surgeon to a seaside hospital at Berek, which were held to prove that rickets could be cured by simple residence at the seaside. Curiously enough, the diet on which the children in the hospital were put, seems not to have been considered of the least importance. As the cases treated were of the age of two to eight years, it is obvious that they included both the condition of rickets and its consequences; and, as M. Tillaud subsequently pointed out, the deformities caused by rickets, often continue to adult life, and are amenable only to operation. He urged French surgeons not to repeat the error they committed in 1866, when they rejected osteotomy altogether.

But the French surgeons, in speaking of osteotomy as an English and German operation, lost sight of the careful study of the treatment of rickety deformities which M. Jules Guérin brought before the profession in 1843, and of which he has recently reminded the Académie de Médecine. His treatment was founded on a careful study of the pathological anatomy of the diseased bones. Osteoclasm, the fracture of the bone, should not, he maintained, be compared with osteotomy, since it is applicable only to a different period, in which the bone is, in the main, composed of soft material; but a shell of bone resists straightening, a shell which may easily be broken. During the "second period" of rickets, osteoclasm should, he believed, always be preferred. It is certain, however, that in this period the deformity is still, to a great extent, amenable to other measures. Osteotomy, M. Guérin employed at a later stage, and combined it with division of tendons. He usually had recourse to partial subcutaneous section, dividing the concave side of the bone, while the corresponding portion of the concavity is preserved intact. This is a very important difference between him and his successors, since, in his operation, the limb does not undergo the shortening which results from the removal of a wedge-shaped piece from the convex side. He strongly insists on the advantage gained by the "subcutaneous" method.—*Lancet*, July 15, 1876.

30. *Resection of the Rib in Empyema*.—Dr. PEITAVY records two cases of empyema, treated by resection of a portion of the rib, for the purpose of permanently widening the aperture, and so facilitating both the discharge of pus, and the injection of fluids. In the first case, aged sixty-four, pus was removed by incision six weeks after the first symptoms. In spite of washing out the chest by the double catheter, injection of tincture of iodine, and the use of a drainage-tube, pus was retained and the patient suffered from fever with evening exacerbations, rigors, loss of appetite, and increasing weakness. Attempts

to dilate the aperture with laminaria caused great pain, and it became impossible to wash out the chest properly. Finally, five months after the incision, a portion of the seventh rib, somewhat more than an inch in length, was removed with the chain-saw. Pus escaped, a drainage-tube was inserted, and the symptoms were relieved from that time. The tube was removed after a month, and in another fortnight the wound had closed. In the second case, aged fifty-six, the result was less striking. Two weeks after the first incision, and only seven weeks after the first symptoms, a portion of the eighth rib was excised and a tube inserted. Fever however continued, and, as injections caused coughing and dyspnoea, the tube was removed after twelve days. The case was complicated by a bronchial fistula, but was completely cured about two months after the resection. A third case of empyema is recorded from the practice of Professor Simon, in which resection of the rib acted not so much by allowing the free discharge of pus, as by permitting the approximation of the ribs and the obliteration of the cavity. Peitavy prefers resection to Fräntzel's practice of fixing in a silver canula, because it is less painful, less irritating to the pleura, and tends to diminish the size of the cavity.—*London Med. Rec.*, August 15, 1876, from *Berliner Klin. Woch.*, May 8, 1876.

31. *Union by Ligature of divided ends of Nerves.*—Mr. FAVELL states (Address on Surgery) that some months ago he had an opportunity of examining in the Leeds Infirmary a case then under treatment, in which Mr. Wheelhouse had cut down upon, resected, and united by ligature, the divided ends of a sciatic nerve, which had been accidentally cut across some months previously. The history of the case was briefly as follows:—

The patient, a man aged 22, nine months before admission, was climbing over a fence, when the railings gave way, and he fell backwards upon a scythe which he was carrying. The wound, which must have been an extensive one, as the cicatrix measured nine inches, was situated just below the left buttock. At the time of admission, he was able to walk with difficulty, there being considerable dragging of the left leg, and, as he lifted it, the toes fell to the ground. He was unable to use the muscles of the back of the leg, and there was loss of sensation on the outer side of the leg and foot, the inner side retaining sensation. These conditions, taken in connection with the situation of the cicatrix, led to the inference that the great sciatic nerve had been divided resulting in paralysis of parts supplied by that nerve below the seat of division. The operation consisted in making an incision six inches in length in the course of the sciatic nerve, when the divided extremities were found an inch and a half apart, the upper segment being bulbous, the lower one flattened, and somewhat incorporated with the cicatrix. The two extremities were then cut off, the divided ends brought together, and retained by sutures of carbolized catgut. This was facilitated by flexing the leg upon the thigh, in which position it was retained for some time. The man made a rapid recovery. When I saw him, two or three weeks after the operation, cicatrization was almost complete, though the leg was still retained in its flexed position; but there was ample evidence afforded of returning sensation on the outer side of the leg and foot. In this case, the restoration of sensation and motion appears to have been very gradual; but Mr. Wheelhouse informs me that, since his discharge from the hospital, the patient has gone on steadily improving, and gaining power in his former paralyzed limb.

I have also the notes of a case of division of the median nerve by a wound from glass. It was treated in the same way, ten weeks after the accident happened; but the result does not appear to have been so satisfactory, as, though some amount of return of sensation and motion followed the operation, as the wound healed and cicatrization progressed, the sensation gradually diminished and numbness increased.

Two other cases I have records of, in which the divided ends of the nerves were brought together by suture immediately after the accident. In one case the median nerve, and in the other the ulnar nerve, were entirely divided. Both cases were boys of fourteen years of age. In one month from the occurrence

of the accident, both boys were discharged with their wounds healed, and sensation was perfect in each instance.

Now, I think I may instance these as four very suggestive cases. Perhaps they teach us no new facts in pathology; but, practically speaking, I think they are of importance. It will be observed that, in the two cases in which some weeks elapsed between the receipt of injury and operation, the results were in one case very gradual and slow in their development, and in the other case satisfactory; but in the two cases in which operation immediately followed the accident, sensation, at all events, was rapidly re-established. Now, experience has amply proved that regeneration of nerve-tissue after nerve division readily takes place more or less perfectly under favourable conditions. Dr. Hassall says: "The regeneration of the primitive nerve-tube admits of proof both by experiment and direct observation. The experimental proof consists in the simple division of nerves, or even in the removal of portions of them. The parts to which the nerve is distributed of course at first lose their sensory and motor endowments; these, however, after a variable time, are more or less perfectly recovered, thus completing the experimental proof. The recovery of the power of a nerve after the excision of a portion of it, argues strongly the fact of the regeneration of the nerve-tubes; and this result, by a careful microscopical examination, can be positively demonstrated. The number of tubes in the renewed part of the nerve is stated, however, to be less than in the original portions; and this, in part, explains the reason of the restoration of the functions of a divided nerve being usually but imperfect." Every surgeon, too, is familiar with the fact, that parts which have been completely severed, such as tips of fingers, will, if reunited, regain sensation, though the nerves have been completely divided. Thus, under favourable conditions of position, we may look for such an amount of return of sensation and power of motion in parts supplied by divided nerves, as shall not materially interfere with future usefulness; but the practical lesson to be learned from such cases as these is, that we may with safety so manipulate nerves as to insure such conditions of position. Perhaps the very painful, and sometimes even disastrous, result which has followed the ligature of an important nerve, has deterred surgeons from interfering with them when divided. Sir A. Cooper records two cases of death from this cause—one from the ligature of the sciatic nerve to arrest hemorrhage from an artery in its substance, and another in which the popliteal nerve was accidentally included in a ligature put round the artery. In both cases violent pains and death resulted.

In the cases I have recorded, I find complaint of much pain after operation in only one case—the first one operated on, in which the sciatic nerve was the one implicated. In this case there seems to have been great pain on the day of operation and the day following, but in the other three no mention is made of any disturbance caused by the operation. Probably the use of catgut-suture, which, we know, soon dissolves, and the fact that the sheath of the nerves was carefully selected, as the portion to be principally included in the sutures, may have had much to do with such fortunate results.

As a beginning, then, I think these four cases are both interesting and encouraging. If, in the case of a limb left paralyzed by division of an important nerve, we can afterwards cut down upon, resect, and reunite such nerve, so as to restore power and sensibility to the parts supplied by it, at no great risk, much has been gained; and in cases of extensive wound or laceration, involving important nerve-trunks, these records raise the question whether it is not better not to be simply content with ligaturing bleeding vessels, and leave the nerve-trunk to the chance of assuming its original position, by carefully and accurately closing the wound, but to insure the coaptation of its divided ends by the careful introduction of catgut-suture.—*Brit. Med. Journ.*, Aug. 5, 1876.

32. *Sulphurous Acid Wash as an Antiseptic in Country Practice.*—Mr. JOHN BALFOUR strongly recommends (*Edinburgh Medical Journal*, Aug. 1876) sulphurous acid wash originally advised by Dr. Dewar, as a valuable antiseptic for the use of the country practitioner, who may be called on at any moment to operate in slight cases without any assistance, and to perform a capital ope-

ration with such aid as may on the spur of the moment be available. He says he has now used it "for many years with great satisfaction in all cases of factory accidents, cuts, and lately in a case of amputation at the shoulder-joint. In the proportion of one in twelve of water, I find that it at once alleviates pain, minimizes suppuration, is easily applied, and facilitates dressing the wound, while it costs almost nothing. When the fingers are the parts injured, I have a large teacup filled with the wash put by the patient's side, and into this the injured part, covered with the thinnest rag to be had, is dipped as often as desired. Should the injured part be the hand or any other part of the body, it is supported on a pillow covered with gutta-percha tissue or oilskin, and the wash is applied by means of a little tow, which is allowed to remain in the cup."

33. *Fissure of the Anus in Children at the Breast.*—Fissure of the anus, so common in adults, is very rare in infancy. Dr. MARBOURG records (*L'Union Médicale*, May 18th) a case which he treated in an infant of only two months old, and he has collected and given an account of all the few cases of the disease occurring in nursing children which he has been able to find recorded.

OPHTHALMOLOGY.

34. *On the Principles which should Guide us in Selecting an Operation in Cases of Senile Cataract.*—Dr. C. B. TAYLOR, in a paper read before the Surgical Section of the British Medical Association, remarked, that, "in selecting an operation in a given case of senile cataract, we must consider, first, which operation will secure the least number of lost eyes; and, second, how shall we at the same time insure the highest acuity of vision and the most perfect cosmetic result. The first consideration is undoubtedly paramount, but it is nevertheless impossible to ignore the second. The greatest average of success in complicated or difficult cases may be obtained by providing against disaster by the excision of a portion of iris, either as a preliminary or at the time of the operation; and in certain cases the cosmetic defect of a mutilated pupil may be avoided by making the incision upwards and limiting the iridectomy to the periphery of that membrane, leaving the pupil untouched and free in the anterior chamber, an operation which the author first introduced four years ago, when the Ophthalmological Congress was held in London; but by far the most beautiful and perfect results in favourable and average cases are secured by a form of incision which the author first practised in 1865, and illustrated by an engraving published in the *Edinburgh Medical Journal* in 1868. This operation is really a small flap, the base of which, instead of corresponding, as in Daviel's time-honoured operation, to the horizontal diameter of the cornea, occupies a position about midway between that line and the corneo-sclerotic junction, while its free edge lies in the vascular limbus corneæ; at first, this small flap was made upwards, but latterly, on account of the greater facility of the execution, the lower section has been adopted; any tendency to prolapse of the iris may be combated by the instillation of a solution of eserine immediately before commencing the operation. Iridectomy is undoubtedly a valuable resource, but it has its disadvantages, and is not necessary in a favourable or average case of extraction; if, however, the patient be suffering from marked senile marasmus, or, what is worse, from premature decay, if the cornea be thin, of small diameter, with thin glistening silky skin, or if the iris be much bruised during the operation, it is well to excise a portion of iris. Some patients who had undergone extraction and recovered with central and movable pupils were introduced; and the author mentioned that the sight was much more perfect in these cases than in those persons in whom it had been necessary to excise a portion of the iris; as a rule, but little after-treatment was necessary, and in one case the patient had only been confined for forty-eight hours, and went to church with eye uncovered in a bright sun the day week of the operation.—*British Medical Journal*, Aug. 26th, 1876.

35. *The Perception of Colour in Diseases of the Optic Nerve.*—E. RAEHL-MANN publishes observations on this subject. He uses the spectrum, and either shows the patient all the colours at once, or isolates any particular colour by means of slits, and varies the illumination. He also tests whether the spectrum seems shortened at one end or not. If a patient can recognize all the colours of the spectrum, and the latter appears of its full length, there is no need to examine further. Different degrees of illumination, however, may be tried. If any defect is discovered, then careful observation is made as to whether different colours appear the same to the patient, yellow and green, for instance. This may occur even when all the colours of the spectrum have been told off in succession correctly. Another test is to show two colours recognized as distinct, and then leaving one colour (red, say) still visible, find at what part of the spectrum intervening a colour occurs which appears the same (as the red). Another test is to begin with a very feeble illumination, and gradually increase it till colour can be perceived. This amount of illumination may then be compared with that required by a normal eye. The author tests the periphery of the retina by selected pigment colours under a uniform illumination. The perception of colour, in affections of the optic nerve, closely resembles that of the periphery of the normal eye. When the defect is extreme, two colours only are perceived, and the greatest sensitiveness remains for yellow. He considers that a certain deficient sensitiveness for colour is pathognomonic of atrophy of the disk, and of the latter there are two forms. In the marked atrophy, with well-defined disk, there is always a deficient perception, but in the form dependent on choroidal peripheral retinal changes, it does not always occur. In retinitis pigmentosa he has never met with deficient perception of colour. In amblyopic conditions, attributed to alcohol and tobacco, he has not found deficient perception till atrophy ensued. Yellow and green are generally the first to be confounded. Commonly green is said to be white. With a strong light, two colours may be perceived, generally yellow and blue, and with a moderated light, three may be recognized, red, yellow or green, and blue. In a feeble light no colours at all. When colours are tried separately, red, yellow and green, and blue and violet may be confused. In very advanced atrophy, the whole spectrum may simply be seen as a bright light. He narrates various cases which he could watch for some time, and records in detail his observations.—*Royal Lond. Hospital Reports*, May, 1876, from *Græfe's Archiv*. Bd. xxi., Abth. 2, pp. 27-66.)

[The above statements of Raehlmann confirm the conclusions of the senior editor of this Journal, drawn from his own observations, and a comparison of many observations of others in regard to the perception of colours, which are that when there is the ability to distinguish only one colour, that colour is always yellow; when only two, these are yellow and blue. See No. of this Journal for Aug. 1840; also his edition of Lawrence on the Eye, Philadelphia, 1854, pp. 637-648.—ED.]

36. *Congenital Malposition of the Lens in both Eyes.*—MR. J. F. STREAT-FIELD reports (*Royal Lond. Ophth. Hosp. Report*, May, 1876) a case of this in a girl nine years of age. Both lenses were displaced upwards. MR. S. did iridectomy in each eye, excising symmetrically downwards a small section of the iris, not quite up to its greater circumference. The sight, with the aid of convex glasses, was very much improved.

MIDWIFERY AND GYNÆCOLOGY.

37. *Hot Water Injections in Uterine Hemorrhage.*—DR. WINDELBAND, at a meeting of the Berlin Medical Society, read a paper bearing the above title, descriptive of a practice which, paradoxical as it may appear, he regards as one of great importance and efficacy. His attention was first drawn to the

subject on perusing an account extracted from an American journal, in which Dr. Mann described the great benefit he had derived from hot-water injections in two cases of abortion—the pains, which had abated, being again aroused, and the hemorrhage ceasing. Called himself soon after to a case of abortion at three months, in which plugging, ice, ergot, etc., had in vain been tried to induce pains and check hemorrhage, he found the cervix uteri much relaxed, and the patient almost in a state of collapse. He resolved to try the injections, and, having introduced the uterine tube of a syringe within the cervix, threw in water at a temperature of 38° or 39° Réaumur (118° to 120° Fahr.). Immediately the hot water gained admission, the cervix began to contract and uterine pains were aroused, and by the time that eight or ten injections had been made, at intervals of five or ten minutes, the whole contents of the uterus had been expelled and the hemorrhage completely arrested. Encouraged by such success, Dr. Windleband has pursued the same practice in all subsequent abortions of a similar character; and, indeed, in all cases of hemorrhage connected with uterine relaxation, at whatever period this occurred, as also for the relief of spasmodic pains, and for the excitation of pains when too feeble, he has always availed himself of this stimulant, and has never found any disadvantage result from the practice. He relates two cases of placenta prævia in which the hemorrhage was permanently arrested.

Dr. Windleband stated that he only brought these few cases before the Society as specimens, assuring it that he had also met with a great number of abortions and deliveries (the latter less numerous than the former) in which severe hemorrhage was present, in the relief of which he had almost exclusively relied upon this means, without being disappointed, and without having witnessed any subsequent ill effects resulting from it. In cases in which hemorrhage has resulted from other causes, such as changed position of the organ, chronic inflammation, or uterine fibroma, palliative treatment by this means has proved of great value. He cites the case of a lady, the subject of two intramural uterine fibroids, in whom sudden excitement, mental disturbance, etc., brought on violent attacks of hemorrhage, by which, owing to the distance at which she lived from medical aid, she was often placed in a dangerous position. But, having the means at hand of using these hot-water injections, she found herself in comparative safety, and could even venture upon long journeys, while formerly she hardly ever dared to leave home. A two years' experience in treating the most varied and violent forms of uterine hemorrhage has amply proved that in these injections we have a most invaluable and certain means of dealing with these dangerous cases, which is much to be preferred to the employment of cold, astringents, etc., when prompt treatment is required. Plugging during the above period has only been resorted to when, from the suddenness of the occurrence of hemorrhage, a syringe or suitable apparatus has not been at hand. As far as a limited number of trials show, it seems also that the injections may be used in various conditions of the uterus which, independently of the existence of hemorrhage, call for a local stimulating treatment.

As to the mode of procedure, the injections have always been administered by means of a simple irrigator (the patient lying on her back), which enables a continuous and energetic stream to be propelled, the temperature of the water employed commencing at 38° R. (118° Fahr.), and increasing to 41° R. (124° Fahr.), the sensibility of the organs soon adapting themselves to the increased temperature. Not only are the effects soon produced, but they are unaccompanied by any of the unpleasant sensations and the various serious inconveniences that the application of cold so often gives rise to. While the warm injections are agreeable to the feelings of patients, however varying their susceptibility to pain may be, they never induce painful or mischievous reaction.

Dr. Windleband, in conclusion, observes that if it be objected that these results derivable from the warm injections are not in harmony with the well-known effects of warmth in producing relaxation of tissues and dilatation of vessels, attention should be directed to the fact that it is not warmth that is thus applied, but heat, and that we have to do with a contractile organ of very easy excitability. In fact, this heat arrests hemorrhage by stimulating the

muscular fibres of the uterus, just in the same manner as the application of cold does so. The enormous contractile action induced by the injections may be judged of, by placing the finger within the cervix while they are being administered. That they induce any direct coagulating power upon the bleeding vessels, is not to be supposed, as no signs of such power have been observed, and the temperature employed is insufficient for that purpose.—*Med. Times and Gaz.*, Aug. 5, 1876, from *Deutsche Med. Woch.*, June 17.

38. *Hydrate of Chloral in Puerperal Convulsions.*—Dr. CHOUPE, having had the opportunity of observing carefully a considerable number of cases of puerperal convulsions, has come to the conclusion that, of all the means we possess, the hydrate is the most reliable for treating this disease. In twelve cases in which it was alone employed the termination was successful, although in some of these the state of things seemed desperate when it was commenced. He thinks, indeed, that it should be resorted to even before the disease becomes confirmed, whenever the woman, exhibiting albuminuria and œdema, complains of headache, ringing in the ears, hallucinations of vision, restlessness, cramps or vague pains in the limbs, etc. When there is trismus present it should be given in enemata, which have also the great advantage of being able to be given during the paroxysm. The doses will vary according to the tolerance of the patients and the severity of the paroxysms, but it is necessary to commence with a pretty strong one (especially if the paroxysms are violent and close upon each other), in order to make a powerful and quick impression. After a calm has been obtained, and if the attacks do not recur, some smaller doses may be given during the next twenty-four hours or so; but if the attacks recur, large doses must again be resorted to until the paroxysms have completely ceased. In an enema we may always begin with thirty grains, repeating this at the end of ten minutes; and by the mouth at least forty-five grains should be given at once, fifteen grains being repeated every quarter of an hour. In a violent attack the dose required will vary from 120 to 180 grains; and it may even be requisite to resort to hypodermic or intravenous injection. In all cases it is of importance to get at least sixty grains rapidly taken, and to prolong the use of the chloral for a tolerably long time after the cessation of the convulsions.—*Med. Times and Gaz.*, Aug. 26, from *Gazette Med.*, Aug. 5, 1876.

39. *Puerperal Fever.*—Mr. R. PARK has given (*Glasgow Medical Journal*, July, 1876) his recent experience of puerperal fever. He gives the details of six cases, and makes the following remarks: "I think no one will venture to call in question the assertion that Case I. was autogenetic, and that the predisposing cause was mental depression, and the exciting one her having sat up in bed and wearied herself trying to get her baby to take the breast.

"I can throw no light on the causation of the second case, it having occurred in the practice of another. However, it had all the appearance of a case that would be eminently contagious, and yet I attended eight cases before attending the third case, *all of whom did well.*

"Nearly seven weeks had elapsed since my attendance on No. II. when I delivered No. III. It is hardly possible I could have been the medium of infection here, if infection there was. Of all the eight patients above alluded to, none were *à priori* less likely to be recipients of a puerperal poison than this smart little woman. Besides it was, to all intents, a different *kind* of fever. In No. II. the fever was the essential disease, the peritonitis, etc., being complications; in No. III. the peritonitis was the essential complaint throughout, the fever being symptomatic. Her connection with scarlet fever is significant, but I cannot persuade myself that this was the cause of her trouble. I incline to the belief that her illness was like that of No. I., entirely autogenetic, the predisposing cause having been mental, and the exciting cause not obvious.

"Whilst attending Mrs. C., I also attended Mrs. C. A. She was a primipara, æt. 30, strong and vigorous. Both husband and wife were very anxious about the issue of the case, and so, against my will, I had to remain a long time with her, wearing the same garments I wore when attending Mrs. C. (I would be about thirty-six hours in pretty close attendance), and finally had to

use long forceps. She made an excellent recovery. It is manifest from this, either that the fever from which Mrs. C. suffered and died was not communicable, or else Mrs. C. A. was not inoculable. During October I also attended six other cases, all of which did well.

"On November 15, or exactly a month after Mrs. C.'s death, I attended Mrs. L. Her case has often caused me to make the mental inquiry whether some cases of puerperal fever may not antedate the birth of the foetus. I am firmly persuaded in my own mind that hers was an autogenetic fever, and that she was ill previous to her delivery and before I first saw her. In her case I only made one vaginal examination, which was two days before her delivery, and consequently before the vaginal surface could have been abraded and absorption made easy. After labour, very little manipulation sufficed to bring away the after-birth, and supposing myself to have been at the time infection-laden, it is not readily conceivable how I could have communicated it here. But, *can I have been infection-laden, and yet able to attend Mrs. O., the very next day after Mrs. L.'s confinement, and yet not convey it to her?*

"Mrs. C.'s case (No. V.) was the most nearly consecutive of any of the series, and but for Mrs. O.'s intervening, I should have had very little hesitation in believing that I was the infection carrier. The occurrence of this case, however, renders it at least doubtful. I incline to the opinion that it was another instance of autogenesis—the act of giving birth being probably the last of a series of causes tending to upset the standard of health, and most likely, of these, actual contact with scarlet fever was not the least. Since Mrs. F.'s case (No. VI.) I have only attended one case, which was on February 11th—a fronto-pubic presentation—requiring the use of long forceps. She made an excellent recovery.

"No one who knows anything of the literature of puerperal fever, or who has had much experience of it in practice, would venture to assert that medical men have never been the means of conveying the disease to their patients. On the contrary, there is ample evidence on record tending to support the opposite position, and most of us are aware of instances in which it has occurred. Nevertheless, I think our views upon the subject have been and are too narrow and dogmatic. It has been proved that the fever may be autogenetic. My first case would prove it, supposing there was not another on record. This being established, then, it is quite possible that a number of cases—autogenetic—may occur in any practice within a limited period; and the assertion that all the cases following the first were due to conveyance of contagion by the medical attendant, should not be made without the most complete proof that such was the case in the individual instance. I contend that of this proof *consecutiveness of cases* should be the most essential element. For I believe we have not to encounter here a difficulty which faces us in dealing with the etiology of other fevers, viz., the question of greater or less predisposition to the fever. Let it be granted that an accoucheur is infection-laden, it matters not from what source, then *all* parturient women are liable, and equally so, to absorb the poison from him. I maintain it would be quite impossible for an infection-laden practitioner to attend a case to-day which should do well, and another which should die, and a third to-morrow who should do well.

"The question whether puerperal fever, when it has once been engendered, is *always* infectious or contagious, is also raised by my 'experience.' It is a very difficult one to answer, owing to the precautions in the way of disinfection invariably adopted. The only case of my six which, if I may be excused the expression, *looked* infectious, was that of Mrs. H. (No. II.), which answered to Ramsbotham's description of puerperal typhus, and yet I am not aware that any case became infected through it, although the practitioner in whose practice it occurred has a large midwifery practice amongst the lower classes in the town.

"The question of quarantine is the necessary complement of the other questions relating to puerperal fever. The element of disinfection comes in here again, and renders it difficult to estimate the *length of time* required to get rid of infection. So far as my 'experience' goes, and supposing, for the sake of argument, that I was infection-laden during the whole of the autumn months

after attendance on Case II., then it will be evident that, *even with the aid of disinfectants*, 85 days (July 7th to September 30th), are insufficient to get rid of the poison. The periods between the other cases were respectively four weeks, eight days, 6 weeks.

"It may be remarked here that I had on the same coat—a loose jacket—at all the confinements except the first. The disinfectant was Condy's fluid, which was used on all occasions, both to wash out the vagina of the patient and for my own hands before leaving the house. Then I am in the habit of taking a Turkish bath every two or three weeks, which I regard as the best of all personal disinfectants.

"It is a striking fact that in all the cases, except Nos. II. and VI., the lochia were normal, so far as order and quantity was concerned. Regarding the lochia in No. II., I did not investigate personally, as the case was hopeless ere I saw it. In No. VI. they were most offensive, however, and the odour of them attracted my attention before any other symptom. Yet the patient recovered."

40. *Sacciform Development of the Posterior Uterine Wall during Pregnancy.*

—In the *Archives de Tocologie* Prof. DEPAUL discusses a condition which he believes to have been hitherto incompletely described, or to have been mistaken for the result of complete or partial retroversion of the uterus during the earlier months of pregnancy. He first relates two cases which have come under his own observation, the first of which he saw in 1857 in conjunction with M. Parise. The patient was married at the age of eighteen, became pregnant after fifteen months, and was delivered naturally in 1852. In 1855 an abortion took place during the third month of pregnancy. After this she became pregnant again, and her confinement was expected about June 25th, 1857. She was then twenty-five years old. Some pains came on on June 25th, but subsided, and did not recur till July 28th. Considerable hemorrhage then took place, but ceased after some hours. After three days it recurred, and continued until August 3d. The pelvis was then found to be filled by a hemispherical tumour, in which M. Parise could distinguish the tubera ischii of the fœtus through the wall which covered them. The os uteri could be reached, high up behind the pubes, and appeared to be dilatable. The patient was treated by warm baths up to August 7th, by which time the fœtal movements had ceased. The patient then passed into a state of fever, after a rigor lasting two hours. M. Parise then introduced his whole hand, and felt what he believed to be the upper edge of a vertical septum, 20 cm. high, over which the fœtus was doubled up. He attempted to seize a foot, but in vain. Prof. Depaul was called in on August 10th, fourteen days after the commencement of labour, at which time there was a fetid discharge from the vagina. He then found that the cervix was not obliterated, and that the supposed septum was simply formed by the rigid and tendon-like crescentic lower margin of the internal os. He made slight incisions in this hard edge by means of a sickle-shaped bistoury in several places, and was then able to seize a foot, and extract a decomposed fœtus of more than normal size. The tumour which filled the vagina was an infundibulum, formed, as Prof. Depaul thinks, by undue development of one part of the uterine wall. He believes that the rigidity of the internal os was due to irritation caused by the fœtus being driven down into the infundibulum by the uterine action. The mother recovered well. M. Parise has published this case as being one of utero-interstitial pregnancy. Prof. Depaul thinks this an erroneous view, since the patient was quite well during her pregnancy, a state of things very different from that which occurs in tubo-uterine pregnancy.

In the second case, notwithstanding the lesson taught by the first, Prof. Depaul mistook the condition, as others have done, for one of complete obliteration of the os uteri. The patient, aged thirty-five, had had one miscarriage at about the second month, without any apparent cause. Labour came on on April 29th, 1875, when she was $7\frac{1}{2}$ months pregnant. When she was seen by Prof. Depaul vigorous pains had continued for thirty hours, and the pulse was 106. There was some œdema of labia and lower extremities. The uterus

reached four finger-breadths above the umbilicus; its walls seemed to be thin and unusually tense. The quantity of liquor amnii appeared to be great, and vigorous fœtal movements were felt. The vagina was filled by a tense tumour, formed by part of the uterus, and reaching nearly to the vulva. The posterior cul-de-sac was obliterated. Anteriorly, Prof. Depaul believed that his finger reached, with difficulty, a cul-de-sac, without feeling any os or cervix. The vagina seemed dry, and it could not be ascertained that there was any uterine discharge, although the patient gave a doubtful account of the escape of some watery fluid the day before. A slight depression existed in the centre of the tumour, which confirmed the diagnosis that the case was one of obliteration of the os. A transverse incision was therefore made in the situation of the supposed os. Alarming hemorrhage followed, and when the finger was introduced, a spongy mass of placenta was felt. It was then supposed that the case was complicated by placenta prævia, and the vagina was plugged till the next morning. The plug was then removed without the occurrence of further hemorrhage, and some liquor amnii was allowed to escape by passing a sound through the placenta. In the evening no further change had taken place, and the patient was becoming exhausted. Prof. Depaul then introduced a pair of forceps, by which he gave exit to the rest of the liquor amnii, and removed in fragments the placenta which presented. He then, after much difficulty, brought down a leg by means of a blunt hook. By powerful traction the trunk was then extracted, but the head separated from it, and remained behind in the uterus. After attempting for three-quarters of an hour to obtain a firm hold of the head by craniotomy forceps or crochet, Prof. Depaul thought it better to suspend his efforts, and the patient died at 4.30 A.M. *Post-mortem*: The os uteri was found to be in front, above the upper margin of the pubes, and having a diameter of 3 cm. (1.2 inches). Its distance from the artificial opening in the axis of the uterus was 9 cm. (3.6 inches). The whole of the uterus formed a regular ovoid, but the development of its posterior wall had been relatively so much greater that the anterior wall had a meridian length of only 21 cm. (8.3 inches), while that of the posterior wall was 46 cm. (18.1 inches).

Prof. Depaul then reviewed a number of instances recorded in which a similar condition was found at the onset of labour, most of which were regarded by the authors who relate them as due to a posterior obliquity of the uterus, continuing up to full term, or as the result of a more complete retroversion in the earlier months of pregnancy. Franke, however, who records a case of the kind, regards it as being the result of a sacciform dilatation of the posterior uterine wall, perhaps combined with a partial retroversion of the uterus at term, in reference to the axis of the pelvic inlet. Special reference is made to the view of Dr. Barnes, who, in his *Lectures on Obstetric Operations*, explains the condition as due to excessive development of the *anterior* uterine wall, consequent upon complete retroversion during the earlier months of pregnancy, but does not support his opinion by any case in which an autopsy was made, so that the mode of development of the uterus could be ascertained from the position of the broad ligaments.

Prof. Depaul believes that the growth of different parts of the uterine wall is often very unequal, and from the condition found at the autopsy in his second case he draws the conclusion that the displacement of the os forwards and upwards is due to excessive development of the *posterior* uterine wall, the result of which is eventually to form an infundibulum at the lower end of the uterine ovoid.—*Obstetrical Journal of Great Britain and Ireland*, Aug. 1876.

41. *Dilatation of the Uterus*.—DR. LOMBE ATTHILL, in his address before the Section of Obstetrics of the British Medical Association, remarks: "I am well aware that by some practitioners the dilatation of the uterus is still looked on with dread, and that the attempt, if made at all, is undertaken with the greatest hesitation. I can only say that I believe these fears to be groundless, and that, if due care be taken to select suitable cases, and proper methods of carrying out the process be adopted, the treatment is as safe as well as a justifiable one. My own experience in the dilatation of the uterus has been great. I have practised it very frequently indeed during the last ten years, and as yet in no single

instance has a bad symptom followed, nor have I even once been compelled to abandon the attempt. But I am far from throwing doubt on the accuracy of the statements made by others, who have recorded the occurrence of alarming symptoms, or even of death, as consequent on the attempt to dilate the cervix uteri; and I am quite prepared for the possible occurrence of such, for all are aware that cases must occur in which the most trifling exciting cause will be followed by serious symptoms, though no grounds existed beforehand for anticipating the occurrence of such. But these are exceptional, and I believe, as a rule, that when serious symptoms arise, either during the process or in consequence of dilatation of the cervix uteri, they do so either because an unsuitable subject has been selected in whom to practise the treatment, or an unwise method adopted for carrying it out. On examining the records of the cases in which serious or unpleasant symptoms followed the attempt to dilate the uterus, I find they have generally occurred when practised—

“1st. Either for the relief of dysmenorrhœa depending on the existence of a narrow cervical canal;

“2d. When the cervical canal is encroached on by a fibroid of large size and unyielding structure;

“3d. When the process has been attempted to be carried out rapidly by means of metallic dilators, or,

“4th. When it has been protracted over several days.

“I have therefore, in order to guard as far as possible against the serious results recorded by others as following attempts to dilate the uterus, laid down for myself the following rules, which I can recommend with confidence to others.

“1. Never to dilate the cervix uteri for the cure of dysmenorrhœa or sterility depending on a narrow cervical canal or conical cervix.

“2. Never to dilate in cases in which a large and dense intra-mural fibroid presses on and partially obliterates the cervical canal.

“3. Never to use metallic dilators of any kind, but to choose for the purpose either sponge or sea-tangle-tents, which expand slowly and gradually.

“4. Never to continue the process of dilatation for more than forty-eight hours. I prefer, in the few cases I have met with in which, after the lapse of that time, the cervix was not sufficiently opened to suit the purposes I had in view, to postpone all operative interference for some weeks, rather than risk the result by prolonging the dilating process.

“With respect to the first of these rules, I look upon the treatment of what is termed ‘mechanical dysmenorrhœa’ by dilatation as being altogether a mistake. I doubt if any permanent benefit has ever resulted from it; while in several cases grave symptoms, and in one death, has to my knowledge followed the attempt. Equally, it is of importance not to prolong the dilating process. My own experience in the treatment of uterine disease requiring dilatation leads me to this conclusion, that unpleasant symptoms are likely to occur in a direct ratio to the length of time over which the process of dilatation extends. Again, I have known death to follow the attempt to dilate the uterus in a case where a large fibroid of dense structure, giving rise to menorrhagia, and causing intense pain, was developed in the uterus, and encroached on the cervical canal. In such cases, dilatation is doubly objectionable, because the process is useless as well as dangerous: useless, because you will generally find that any attempt at operative interference from the interior of the uterus will be impossible; and dangerous, because inflammation is liable to follow, and that too in patients in the worst possible condition for resisting the attack.”—*Brit. Med. Journ.*, Aug. 12, 1876.

42. *Uterine Fibroids*.—“In the treatment of uterine fibroids,” Dr. LOMBE ARTHILL remarks, “we have made progress, but not as yet to a satisfactory extent. This much we know for certain, that many such cases, if menorrhagia be not excessive or pain intense, are best left alone; and it is astonishing in how many instances, even where menstruation is profuse, this course proves to be a wise one, treatment being restricted merely to what is absolutely necessary to prevent the flow being excessive. But, unfortunately, exceptions are of but

too frequent occurrence; and how are we to treat these? The removal of large fibroids by abdominal section has been successfully practised, but the risk of life involved in the operation is great; and the attempt to remove smaller ones by means of the *écraseur*, after dilatation of the cervix, is, I can vouch from personal experience, a difficult and eminently hazardous process. Again, enucleation is tedious, unsatisfactory, and often dangerous.

We have, however, at our command a resource which, if not all that we desire, is still generally efficient in controlling hemorrhage, often sufficient to arrest the growth of the tumour, and sometimes apparently capable of reducing its size. I allude to the hypodermic injection of ergot, which, if it has failed in this country to produce the almost marvellous results ascribed to it by Hildebrand, is, if properly carried out, a safe as well as an efficient remedy. In my first cases, the results obtained were not only uncertain, but unsatisfactory, for troublesome sores sooner or later formed at the seat of the injection. Of late, however, I have obtained much better results. In not one of ten cases recently under my care, in which I fairly tested this treatment, has the hypodermic injection of ergot been followed by the formation of an abscess or sore; in all it had more or less effect in restraining hemorrhage: in one, the injection was repeated almost daily for five months, with the effect of absolutely restraining excessive menstruation, but with no other beneficial result, for the bulk of the tumour remained unaltered, and the pain was as intense as ever. Still it was no small matter to have transformed a profuse and exhausting flow, which formerly lasted for twelve or fourteen days, into one of moderate character and of but two or three days' duration. It is evident, then, that in ergot, employed hypodermically, we have a powerful agent, one capable of exerting a marked influence on uterine fibroids, but still uncertain in its action, and not altogether to be relied on.—Address before Obstetric Section Brit. Med. Assoc. *British Med. Journ.*, Aug. 12, 1876.

43. *Pelvic Hæmatocele successfully treated by Drainage.*—Mr. J. K. THORNTON relates (*Med. Times and Gaz.*, June 10 and 17) two cases of this; and calls attention to the following points: "1. That it is advisable in some cases, when the effusion is so large or its situation such as to render the chance of spontaneous evacuation dangerous, to open pelvic hæmatocele, though no serious symptoms are present. 2. That free incision and drainage are preferable to puncture in all cases, when possible. 3. That it is not advisable to puncture per rectum, unless compelled to do so by the relations of the effusion. 4. That it is not advisable to use injections in early stages after opening."

44. *Certain forms of Ovarian Disease.*—"Information is specially needed." Dr. ATTHILL remarks (Address before Obstetrical Section Brit. Med. Assoc.), "with respect to some forms of ovarian disease. Some patients suffer for years from pain and tenderness of the ovary, from mammary pain and nausea of a most distressing character. Such I have seen reduced to a condition of actual despair; for all treatment seems useless, so utterly inefficient does it prove. In these cases, the ovaries are in general plainly enlarged, but the exact pathological condition of them is in many cases unknown. Here is an affection most deserving of investigation, both as to its causation, pathology, and treatment. I know of no form of disease which produces more real suffering, equally of mind and body. An American surgeon, Dr. Battey of Georgia, convinced of the inadequate results produced by ordinary treatment, has recommended the extirpation of the ovaries in such cases, arguing that, from the results on animals, the operation would be safe as well as justifiable in the human female. I confess that to my mind his views contain much of truth, and that, were I satisfied that I did not endanger life, I would in some cases sanction the operation; and I think we may possibly yet see it practised even amongst ourselves, as I believe it has been in America. But such a practice would, after all, be a lamentable confession of the inadequacy of medicine to cope with what should be a curable disease. Let us hope that, as light is let in on these obscure questions, this reproach will be removed."—*Brit. Med. Journ.*, Aug. 12, 1876.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Subperiosteal Abscess with Hyperostosis of Femur; Extensive Burrowing of Pus; Chronic Pyemia; Recovery. By Wm. M. FINDLEY, M.D., of Altoona, Pennsylvania.

W. A. P., æt. 34, of a scrofulous or tuberculous tendency, was attacked with severe deep-seated pain on inner side of right thigh, along the attachments of the adductors; supposed to have been produced by resting the weight of a piano there in moving it from one place to another. Was treated for rheumatism, etc.; leg enlarged symmetrically from knee to hip, having its starting-point about the middle of the limb however. The limb was not examined, but after a period of eight or ten weeks, in consultation, a small puncture was made from which large quantities of pus escaped. About this time there was pus passing from the bowels and bladder, it is asserted; moreover, pus burrowed down behind the femur, through the foramen in the adductor magnus for the femoral vessels, and passing to the outer side of the leg, broke through the inter-muscular space, and discharged externally. By this circuitous route, the contents were evacuated for some time. The femur became enlarged and painful. About eight months after this time he came under my care, when a free incision between the vastus externus and the long head of the biceps, with another on the inner aspect of the thigh through the vastus internus and crureus, exposed the track of a sinus and sac some twelve or eighteen inches long, extending from the capsular ligament of the head of the femur, to the investing ligaments of the knee-joint. Packing, free use of salicylic and carbolic acids, and permanganate of potassa as injections, the liberal use of quinia and cod-liver oil, and a generous diet, soon restored one who had that waxy, sallow, pyemic look, so common to those suffering from chronic bone disease, to a healthy man as far as present appearances go.

At the present time, one year after he recovered and passed from under my care, W. A. P. is enjoying most excellent health; leg perfectly sound, and he is walking from five to ten miles per day on it without the least inconvenience; he has lost all symptoms of lung complication, from which he was suffering then from the effort to throw off the pyemic secretion.

DOMESTIC SUMMARY.

Thoracentesis.—Prof. S. C. CHEW, of the University, Maryland, discusses (*New York Med. Journ.*, Sept., 1876) the following questions: "When a pleurisy is encountered in which effusion has taken place to such extent as to cause dullness and absence of respiratory murmur over the greater part or the whole of one side of the chest, is medical treatment to be discarded and the assistance of surgery invoked? Should the presence of fluid in large amount be

considered as *ipso facto* and independently of accompanying circumstances an indication for surgical interference; or is it possible to obtain in this stage, from medical means in the strict sense, better results than those promised by surgery? Are we to regard the operation of paracentesis of the thorax as in all cases justifiable and advisable when the effusion has reached any considerable amount; or is it to be resorted to only in certain special conditions, the larger proportion of cases being best dealt with by medical means?"

He considers that there are the three following classes of cases in which the question of pneumatic aspiration of the thorax must be entertained:—

"1. The first consists of those cases in which a large pleuritic effusion has suddenly occurred, and has overwhelmed the function of one lung before there has been time for the supplementary action of the other to be brought fully into play; or again, where hydrothorax, as distinguished from pleuritic effusion, has occupied both sides of the chest in such amount that respiration is dangerously embarrassed. In this class of cases the aspirator must be immediately used, because there is no time for medical means to act, and we are to be guided not by the auscultatory signs alone, but by the clinical conditions of the case.

"2. The second class is composed of cases in which, judging from the physical signs alone, we might be tempted to use the aspirator, and are certainly bound to examine carefully whether the conditions requiring its use actually exist, but in which the clinical state is found on such examination not to demand immediate interference with surgery. For respiration may not be seriously embarrassed, even though the effusion be very large; the rapidity with which it has occurred being a more important factor in the production of dyspnoea than the amount. In these cases, if the condition has not continued long, it is best to use medical means, of which the most efficient are the tincture of the chloride and the syrup of the iodide of iron in doses of from half a drachm to a drachm; and, notwithstanding that their efficacy is denied by some distinguished authorities, I make bold to urge the repeated application of fly-blisters. These agents are, I am sure, of great value; whether they act by a direct stimulant influence upon the absorbents, or by merely removing serum from the capillaries of the chest-wall, and thus rendering them better instruments for absorption, or yet, again, by an action on the vaso-motor nerves, are questions of interest, it is true, but of secondary importance to the general one as to whether they do good clinically; and, that they do, I am fully convinced. For, though I have used them always of late years in conjunction with iron, yet I have seen the line of dulness fall so rapidly under this treatment as to feel sure the change was due more to the blistering than to the small amount of iron as yet taken. Yet the ferruginous medicines perform an important part by increasing the solid elements of the blood, and thus lessening the tendency to transudation, while, in virtue of their diuretic action, they help to remove what has already accumulated.

"3. The third class of cases consists of those in which, as in the first class, thoracentesis is plainly required as the only means likely to afford relief. Into this category some cases belonging to the second class just spoken of may pass; cases, that is, in which although at first there may have been a well-founded belief or hope that they would recover under medical treatment, yet either this hope has been proved by time to be fallacious, or the cases when first seen by the physician have manifestly passed beyond the period within which it would be worth while to wait longer for the action of medicine. For here there may be risk of ultimate danger accruing to the lung through long-continued pressure causing carnification. In this third division I would place also those cases in which there is good reason to believe that the effusion is purulent; hence the importance of being able to decide this question with certainty; for, the purulent nature of the fluid once determined, it is useless to continue medication with a view to its removal. Nothing remains but mechanical evacuation. In any case where the fluid is suspected to be pus, an exploratory puncture may be made with a fine aspirating needle, which may thus be a diagnostic as well as a therapeutic means."

The several conditions which Prof. C. would group together in the third class as clearly requiring the use of the aspirator, are—

"1. Where the purulent character of the effusion is indicated with certainty or with high probability.

"2. Where an effusion reaching half-way up one side of the thorax is undiminished by medical treatment persistently applied for three or four weeks; and, *à fortiori*, if it have increased in spite of such treatment.

"3. Where, with a large effusion, previously not alarming in character, sudden and urgent dyspnoea has occurred. Lives have, no doubt, often been lost from the operation having been delayed or not performed in such conditions; but, with its use, under the most threatening circumstances, prompt relief and deliverance have many times been given."

Transfusion of Blood in the Last Stages of Phthisis.—Dr. Jos. W. Howe records (*Archives of Clin. Surg.*, July, 1876) three cases in which he performed this operation. The conclusions which he draws from these cases are—

"*First.*—The operation of transfusion in phthisis is peculiarly dangerous, because with a weakened heart there is obstruction to the circulation in the lungs, and deficient aeration of the blood, which both tend to overcome the heart's action and produce syncope.

"*Second.*—The introduction of healthy blood temporarily improves the condition of the patient, in much the same manner that alcohol and quinine do when taken into the system.

"*Third.*—The transfusion of blood in advanced phthisis is scarcely a justifiable operation, because the temporary benefit obtained does not by any means compensate for the risk of the operation."

The Crepitant Râle; its Nature and Conditions of Production.—Dr. W. H. WORKMAN, of Worcester, endeavours to establish (*Boston Med. and Surg. Journ.*, Aug. 3, 1876) the following points in regard to this subject: The crepitant râle has its seat in the alveoli and infundibula, and possibly also in the ultimate bronchioles, the walls of which have the same structure as those of the air-vesicles. It does not occur in the diseased parts, but in those immediately around remaining nearly or quite healthy. Its origin is purely physical, and is due, first, to compression from without, and, secondly, to expansion from within. The compression is produced by adjacent indurations resulting from disease. It makes no difference what the pathological process may be, provided an induration be formed in or at the surface of the lung in such a manner as to give rise to the two above-named conditions in a spot favourable to perception by the ear. Hence, the crepitant râle is peculiar to no one disease, as was formerly supposed, but may exist in several, each having its distinct pathological nature.

The Chemical detection of Lead and Iron Bullets in Gunshot Wounds.—J. R. UHLER, M.D., communicated to the Maryland Academy of Sciences, a method for the more certain detection of leaden and iron bullets when imbedded in the tissues, as in gunshot and shell injuries, especially where they have taken an obscure or curved course, and cannot be readily felt by finger or probe, which appears to be very ingenious.

"The plan he stated was suggested in 1863 by noticing a case in hospital where sulphuretted hydrogen from pus had blackened ordinary lead plaster, and after a little thought was tried and perfected on the spot. It consists of employing materials capable of dissolving lead or iron, such as very dilute nitric acid, and then testing the solution by the usual plan for those metals.

"The apparatus for its application and the method required are very simple, consisting of a syringe to thoroughly cleanse the wounds with pure water, after which a solution of nitric acid, 5 to 15 drops to a drachm of distilled water, is injected into the wound and allowed to remain a short time, to come in contact with and dissolve a portion of the ball. The injected fluid is then withdrawn either by syringe or changing the position of the patient so as to let it run out, and is received when possible at two places, upon a white porcelain plate. One of these spots is now to be tested by a small crystal or solution of iodide of potassium, which will produce a golden-yellow colour if lead be present. The

other may be treated by a solution of sulphocyanide of potassium, giving a beautiful red, or ferrocyanide of potassium affording blue if iron be there. Both of these methods are extremely delicate, and can only be obscured by neglect to wash away pus with accompanying chloride of sodium, or inexcusable carelessness causing loss of blood, and thus producing the reactions of iron from the small quantity contained in the blood-globules. To show most efficiently, the fluid on the plate ought to be colourless, or but slightly tinged like serum. The syringe should generally be introduced but a short distance into the wound, so as to give rise to as little irritation as possible, and the nitric acid solution for the same reason be very dilute. The whole procedure is less irritant than probing, and also extremely useful to the patient, as dilute nitric acid has long been esteemed one of our best dressings for hospital sores. Other solvents and tests might be employed, but the above are the handiest."

Extirpation of the Uterus in connection with Ovariectomy—Recovery. Dr. GILMAN KIMBALL records (*Boston Med. and Surg. Journ.*, Aug. 31st), a case of this. The patient was 48 years old, and had been operated on eleven years before for a cystiform ovarian tumour, which after removal weighed thirty-three pounds. She made a good recovery, and continued in good health for six years, about which time she noticed her abdomen was enlarging. In June, 1875, she was tapped and forty-five pounds of brown coffee-coloured fluid drawn off, followed by extreme prostration. She was again tapped in October, and as these tapplings only afforded temporary relief, and her health failing, she applied November 5th to Dr. Kimball to again operate. This was accordingly done the next morning in the following manner: "An opening through the parietes, in the line of the former incision, was followed by an escape of several ounces of ascitic fluid. A cyst was tapped by a large trocar, and twenty-seven pounds of chocolate-coloured fluid were drawn away through a canula, to which a rubber tube had been attached. The opening was enlarged and the cyst emptied. A semi-solid mass, composed chiefly of a large number of smaller cysts, was slowly drawn through the incision, care being taken all the while to keep the opening closed, as far as possible, against the ingress of atmospheric air.

"In searching for a pedicle it was found that the disease had embraced, in the course of its development, not only the uterus, but the whole of the left broad ligament. A separation of the parts thus involved was found impossible. Consequently, in order to complete the operation, the extirpation of the entire uterus became an unavoidable necessity. A cluster of distended veins connected with the broad ligament was first secured and severed between two ligatures. The remaining tissues to be divided, being thus considerably diminished in bulk, and especially in width, were next embraced in a loop of stout annealed iron wire, drawn tight by means of an *écraseur*. To complete the operation it only remained to sever the connection between the uterus and vagina by two or three strokes of the knife. The point of division was about three-fourths of an inch outside the iron ligature.

"Before closing the wound it was found necessary to remove a considerable quantity of coagulated blood from the pelvic cavity. With some difficulty and delay a bleeding vessel was finally discovered, and secured with a carbolized ligature.

"The pedicle, being too short to admit of a clamp, was drawn forward and secured between the lips of the incision. The surface of the stump was thoroughly seared by actual cautery, and the wound closed with four deep sutures, three above and one below the pedicle.

"Details of this case subsequent to the operation furnish nothing of special interest. During the entire period of convalescence there were no unpleasant symptoms; in all respects they were such as might be expected in an ordinarily favourable case of ovariectomy. From first to last there were no signs of peritonitis or septicæmia."

Ovariectomy.—Dr. R. A. KINLOCH reports (*Charleston Medical Journal* July, 1876) two cases of ovariectomy, both successful. He remarks that "in the

above cases we have not only a test of the value of ligatures of different materials, but that these were employed after distinct methods. Carbolized catgut was used in the first operation, and the ends of the ligature cut off close to the loop, this being left to become encysted or undergo absorption. In the second operation, silk was the material employed. With the right pedicle the loop was left to be encysted. With the left, this was practised only with one half of the pedicle, the ligature of the other half being brought out of the wound.

"This application of distinct methods was not a matter of experiment merely. Originally, and as the result of a careful consideration of the experience of the best operators, I was inclined to the belief, that with silk, as well as catgut ligatures, it was best to leave the loop to take care of itself, *rather than risk keeping open the cavity*. Without wishing to generalize from a small experience, I am, nevertheless, now disposed to regard the so-called open treatment, or the use of the ligature after the original method of McDowell, as offering the best chance for success in certain grave cases of this operation.

"The ligature thus used, insures a certain degree of drainage. If made antiseptic, it can hardly act as a local irritant to tissues with which it remains in contact. It is, besides, incorrect to affirm that the ligature *keeps open* the peritoneal cavity. If it be properly managed, it takes a tolerably direct route from the pedicle and the Douglas *cul-de-sac*, outwards; and its presence, together with the necessary inflammatory or nutritive changes of the first forty-eight hours, establishes a track that is independent, and, as it were, *outside* of the general cavity. By means of this tubular wound then escape the materials, liquid or solid, the retention of which would seal the fate of the sufferer. By this channel also may we expect, by the aid of cleansing or antiseptic injections, to assist the natural efforts by which inflammatory products reach the surface.

"What is here attributed for the ligature, may with greater reason be assigned to the drainage tube. If the former has the advantage of occupying less space, the latter is certainly superior as a means of drainage, and as an efficient instrument wherewith to introduce our cleansing injections. The calibre of the tube allows solid particles, or effete products, to pass readily, gases to escape promptly, and, as we saw in the clinical history of our second case, even large pieces of gangrenous structure to be removed with ease. It is most certainly true that many cases of ovariectomy require no provision for drainage. But can these be invariably recognized? Does it not require an extensive experience in such operations to say when life is, or is not, to be threatened by the detention of exudations or inflammatory products? Is it not a safer rule to give all cases the benefit of a doubt when we have once ascertained that the use of a ligature, or of a tube, is generally well borne? . . . I am firm in my conviction that the retention of the peritoneal serous exudation, that during the first twenty-four hours escaped through the tube in case No. 2, would have proved adverse to recovery. And what shall be said of the consequences that would have ensued had the portions of gangrenous tissue not found ready exit? It may be said by some that the presence of the tube developed such inflammatory products. I cannot admit such a conclusion in view of the abundant evidence given by Professors Peaslee, Thomas, and others, of the tube being generally well borne."

Laceration of the Female Perineum.—Dr. D. M. STIMSON records (*Archives of Clin. Surg.*, July, 1876) the following case of this in which he successfully operated by a procedure devised by Dr. Willard Parker, who has employed it in seven cases with perfect success.

"Mrs. V., æt. twenty-eight, during first labour had her perineum torn completely through into the bowel, the rent extending two and a half inches up the recto-vaginal septum. The labour was instrumental and exceedingly difficult, her pelvis being contracted at the sub-pubic arch. An operation was performed two months after the accident, but it was unsuccessful.

"On May 10, 1876, I operated upon her, assisted by Drs. Geo. A. Peters, and Willard Parker, Jr., Willard Parker, Sr., being also present. The patient, having been duly prepared for the operation by warm douches and attention to

diet and bowels, was etherized, placed in the position for lithotomy, and the parts were shaved. The sphincter ani was divided subcutaneously close to the coccyx on either side, and the muscle stretched. I then dissected, from below upwards, the cicatrices from the ruptured surfaces, leaving the flaps thus obtained attached to the vaginal surface; and split the edge of the recto-vaginal septum so that raw surfaces might be obtained without loss of substance. Next I made a slightly curved incision, three inches in length, parallel to and three-quarters of an inch from the edge of the wound on either side, and carried it deeply enough into the ischio-rectal fossa to enable me to press the deepest part of the fissure together, by my fingers passed to the bottom of these cuts.

"A doubled silver wire was then carried from the bottom of one of the side cuts through the angle of the wound at the split septum to the side cut opposite, and the ends secured around a piece of elastic catheter. The edges of the split septum were united by fine sutures both in the vagina and rectum; two more double wire sutures were placed in the wound and twisted over bits of catheter, one three-quarters of an inch nearer the surface than the first, and the third through the centre of the perineal mass. The cicatricial flaps were now trimmed and brought together so as to form a valve of protection from vaginal discharges, after the idea of Langenbeck. Fine sutures were used also in bringing together the mucous membrane of the rectum; and lastly, the more superficial parts of the perineum were united by the ordinary silk suture.

"The patient was now placed upon her back in bed, her thighs separated widely, and a single thickness of sheet made to be the only covering over their upper parts. A Jacque's gum-elastic catheter was passed into the bladder, with conducting rubber tube; and a dose of morphine administered. The deep sutures were removed on the fifth day. The bowels were moved by castor-oil and enema on the tenth day. The catheter was retained until the tenth day.

"I have to-day, May 30, examined the patient, and find the recto-vaginal septum complete, the perineum entirely restored, and the patient can control the sphincter perfectly unless the bowels are loose.

"The distinguishing features of this operation are: *First*.—That the deep sutures draw in a straight line and a more secure coaptation of surfaces is thereby obtained. *Secondly*.—The side cuts relieve traction by dividing the transverse perineal muscles as well as skin and fascia. *Thirdly*.—Air is admitted freely to the wound, and 'poulticing' to a certain degree prevented."

True Puerperal Diphtheria.—Dr. M. A. Pallen communicated, March 21, to the New York Obstetrical Society a case of this occurring in a woman who had been two weeks before delivered of a healthy child with the forceps for inertia uteri. Mother and child did well, and were returned to the care of the attending physician. Dr. Pallen heard nothing from them until this morning, when he was sent for to see the child. On his arrival he found it dead from diphtheria, which had been diagnosed only twenty-four hours before. The mother, who was up and had been nursing the child, apparently presented no other symptoms than a feverish, excited manner which was attributed to grief at the sudden loss of her child. This evening he was called again and found the woman moribund. Her whole vulva and the vagina, as far up as he could see through an ordinary bivalve speculum, were covered with diphtheritic membrane, the first appearance of which had been noticed at 11 A.M., soon after his morning visit.—*American Journ. Obstet., Aug., 1876.*

International Medical Congress, Philadelphia, 1876.—The International Medical Congress was formally opened at noon on Monday, September 4, 1876, in the University of Pennsylvania, by Samuel D. Gross, M.D., LL.D., D.C.L. Oxon., President of the Centennial Medical Commission. A full abstract of the proceedings of the Congress has already been laid before our readers in the October issue of the *Medical News and Library*.

The Congress constituted the most distinguished medical gathering ever assembled on this Continent, and its proceedings, from a scientific as well as from every other point of view, characterized it as the most successful.

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